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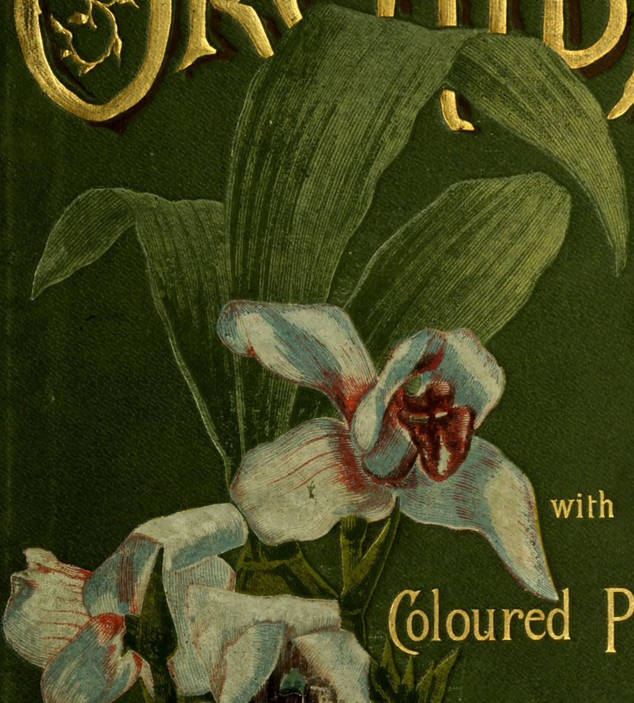

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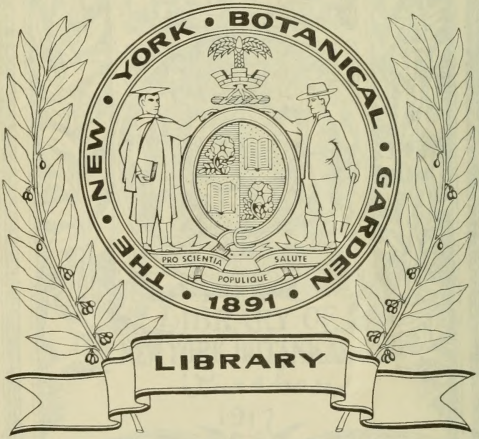

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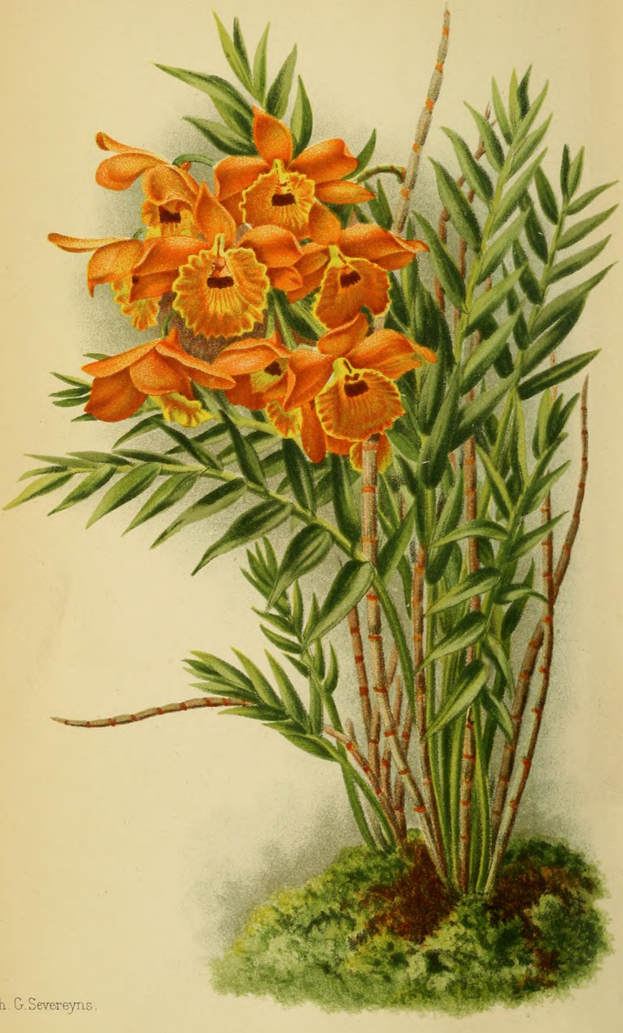
THEIR CULTURE AND MANAGEMENT.



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ORCHIDS:

THEIR CULTURE AND MANAGEMENT.

WITH

DESCRIPTIONS OF ALL THE KINDS IN GENERAL
CULTIVATION.

*ILLUSTRATED BY COLOURED PLATES AND
NUMEROUS ENGRAVINGS.*

By W. WATSON
(*Assistant Curator, Royal Gardens, Kew; Author of "Cactus Culture
for Amateurs"*),

ASSISTED BY

W. BEAN
(*Foreman, Royal Gardens, Kew*).

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AUTHORS' PREFACE.

We believe there is need of a comprehensive book on garden Orchids, describing, in untechnical language, all those known to be worth growing, with full directions for the cultivation of each. It is true there are already numerous books on Orchids, but they are either too scientific for the majority of cultivators, or not sufficiently detailed for those who have everything to learn with regard to the cultural requirements of these plants.

In preparing "Orchids," we have endeavoured to make the descriptive portions as simple as possible, and the cultural directions as full as seemed desirable. The descriptions have been made from living plants, or with the aid of reliable works, such as the *Botanical Magazine* and the writings of Professor Reichenbach in the *Gardeners' Chronicle.* A good figure is also quoted in every case where one is known to us.

The cultural information is based on our own experience in the management of a large and comprehensive collection of Orchids; we have also consulted the writings of the best practitioners, such as Messrs. Veitch, Mr. Sander, Dr. Paterson, Mr. Douglas, and the late Mr. C. Spyers. We feel confident that the directions given in this work are in accordance with the most approved methods of Orchid-culture in England at the present time.

MAR 21 1917

"Orchids" is founded on a smaller work, prepared for the same publishers in 1878, namely, "Orchids for Amateurs," by Mr. J. Britten, F.L.S., of the British Museum, and Mr. W. H. Gower, an experienced Orchid grower. The original intention was to bring this latter work up to date by adding simply the species of Orchids introduced into gardens since it was published. It was found, however, that so much knowledge respecting cultural and other matters had been added within the last twenty or so years that it would be easier to write anew the greater portion of the work than to patch up the old. At the same time, we have included in some of the chapters a considerable portion of what was written by Messrs. Britten and Gower; the chapter on "Structure and Other Peculiarities," by Mr. Britten, we have used with scarcely any alteration. The bulk of "Orchids" is, however, new—that is if works of this kind can be called new.

The present title is preferred because it is felt that a work of this character should be useful to professional as well as amateur cultivators.

April, 1890.

CONTENTS.

CHAP. PAGE

I. CULTURE 1

II. STRUCTURE AND OTHER PECULIARITIES . 16

III. ACINETA 22

IV. ACROPERA 24

V. ADA 25

VI. AËRIDES 27

VII. ANGRÆCUM 43

VIII. ANGULOA 47

IX. ANŒCTOCHILUS 50

X. ANSELLIA 57

XI. BARKERIA 59

XII. BATEMANNIA . . . 62

XIII. BLETIA 64

XIV. BOLLEA 68

XV. BRASSIA . . , . 70

XVI. BULBOPHYLLUM . . . 75

XVII. BURLINGTONIA 78

XVIII. CALANTHE 81

XIX. CATASETUM 87

XX. CATTLEYA 91

CHAP.		PAGE
XXI.	CHYSIS	120
XXII.	CIRRHOPETALUM	123
XXIII.	CŒLOGYNE	126
XXIV.	COLAX	138
XXV.	CORYANTHES	140
XXVI.	CYCNOCHES	143
XXVII.	CYMBIDIUM	146
XXVIII.	CYPRIPEDIUM	152
XXIX.	DENDROBIUM	194
XXX.	DISA	233
XXXI.	EPIDENDRUM	237
XXXII.	GALEANDRA	245
XXXIII.	GRAMMATOPHYLLUM	248
XXXIV.	HOULLETIA	251
XXXV.	LÆLIA	254
XXXVI.	LISSOCHILUS	271
XXXVII.	LYCASTE	275
XXXVIII.	MASDEVALLIA	281
XXXIX.	MAXILLARIA	304
XL.	MICROSTYLIS	310
XLI.	MILTONIA	314
XLII.	MORMODES	326
XLIII.	NANODES	329
XLIV.	ODONTOGLOSSUM	331
XLV.	ONCIDIUM	363
XLVI.	PAPHINIA	393
XLVII.	PERISTERIA	396
XLVIII.	PESCATOREA	401
XLIX.	PHAIUS	406
L.	PHALÆNOPSIS	412
LI.	PLEIONE	424

CHAP. PAGE
LII. PROMENÆA . . 430
LIII. RENANTHERA 434
LIV. RESTREPIA . 437
LV. SACCOLABIUM 440
LVI. SCHOMBURGKIA . 448
LVII. SCUTICARIA . . . 451
LVIII. SOBRALIA . . 454
LIX. SOPHRONITIS . 458
LX. SPATHOGLOTTIS . . . 461
LXI. STANHOPEA . 464
LXII. STENOGLOTTIS . . . 474
LXIII. THUNIA . . . 476
LXIV. TRICHOPILIA . . 480
LXV. TRICHOSMA 487
LXVI. VANDA . . 489
LXVII. WARSCEWICZELLA . 506
LXVIII. ZYGOPETALUM . . . 509
LXIX. BRITISH AND OTHER HARDY ORCHIDS 515
LXX. SELECTIONS FOR BEGINNERS . . 535
INDEX 539

* * *

ORCHIDS:

THEIR CULTURE AND MANAGEMENT.

CHAPTER I.

CULTURE.

In no department of horticulture has such progress been made as in that of Orchid-growing. A few years ago, Orchids were cultivated in only a few gardens where an elaborate and costly system of treatment, then considered indispensable in their cultivation, could be provided. The difficulties of importing the plants in quantity, and in a healthy condition, were much greater at the time we refer to than now. The absence of precise information from reliable observers on the conditions under which the plants were found wild, rendered the management of imported plants precarious. Examples of new and beautiful kinds, for which high prices were paid, often succumbed to wrong treatment. All this tended to make the possession of a collection of Orchids the privilege of the few, and the amateur who could not afford more than a small greenhouse or two, or to pay more than a few shillings for his plants, did not venture to dream even of becoming the possessor of a little collection of Orchids.

All this, however, has been completely changed. Orchids are now successfully imported by the thousand at so small a cost as to admit of their being sold at a few shillings per dozen. Their cultural requirements are, in the majority of cases, now thoroughly understood. So simple are these, that instead of costly houses and a heavy expenditure in fuel and labour, a large number of beautiful kinds may be grown in the simplest greenhouse, with no artificial heat, except perhaps for a month or two in winter. The skill and labour necessary for the successful management of Orchids generally are at most no more than is required by the common stock plants of the greenhouse. When once the general conditions necessary are properly understood, the cultivation of a collection of these plants demands little trouble and little expense.

An amateur who has been successful in the management of Orchids has lately published some excellent observations on the art of growing them.* He says: "It would be wrong to leave the impression that Orchid-culture is actually as facile as market gardening; but we may say that the eccentricities of Phalænopsis and the rest have no more practical importance for the class I would persuade, than have the terrors of the deep for a Thames waterman. How many thousand householders about this city have a 'bit of glass' devoted to geraniums and fuchsias and the like! They started with more ambitious views, but successive disappointments have taught modesty, if not despair. The poor man now contents himself with anything that will keep tolerably green, and show some spindling flower. But such species of Orchid as he might grow would give infinitely greater satisfaction. For a few shillings he can buy a manual which will teach him what those species are, and how to grow them. An expenditure of five pounds will set him up for life with plants. Nothing else is needed save intelligence."

---

* F. Boyle, in *Longman's Magazine*, February, 1888.

Many Orchids will grow as well when placed along with other plants as when kept in special houses. By first ascertaining what are the conditions under which a given Orchid will grow well, it is easy to place it in a position where those conditions are supplied. Thus, some of the cool species of Odontoglossum, Masdevallia, &c., would grow well in a house devoted to cool ferns, or to a mixed collection of greenhouse plants. Dendrobiums and Cattleyas do well in vineries, and so on. When once the general conditions which apply to the artificial management of Orchids are properly grasped, all the rest is easy.

By far the larger proportion of Orchids grow naturally upon the branches of forest-trees, their long roots becoming fastened to the bark, and thus fixing them in position. These, with age, grow round and about the adjacent branches, or hang down, drawing their nourishment almost entirely from the humidity of the atmosphere. Sometimes the roots find nourishment in the *débris* of decayed leaves, &c., which becomes lodged between large branches of trees. This, however, is very different from growing on the ground. Moisture, then, is a most important factor in their culture; indeed, during their period of growth they can scarcely have too much (in reason), and many of them do not like to be allowed to get dry, even when not in a growing state; although it may be accepted as a general rule, that after growth is completed much less water will be necessary. Although Orchids in a state of nature grow upon the branches of trees, there are not many which are treated thus under cultivation, and teak baskets or pots, containing copious drainage and a little peat fibre, or sphagnum, have been substituted, with, as a rule, excellent results.

In potting Orchids, we must see that the pots are perfectly clean; and a greater amount of drainage material is necessary than is used for the majority of plants, because, as they require more frequent watering, there must be provided drainage sufficient to carry it away quickly. Unless this provision is made, the material about the roots of the plants rots or becomes sour, and the plants sicken in consequence. For soil, take equal parts of living sphagnum moss and fibrous peat—that is, peat from which nearly or quite all the fine particles have been beaten. The mixture should be pressed tolerably firm, but not hard, and it should be built up into a small cone, the apex of which may be about an inch, or, in larger specimens, two inches above the rim of the pot; and upon this the plant should sit, for, if buried below, the chances are that the eyes which spring from the base of the pseudo-bulbs will decay, and great injury to the plants will thus result. We have heard amateurs assert that this is a fashion adopted by Orchid-growers simply to be different from their neighbours. This system, however, really has its advantages, for it allows the water to fall away from the young growths more rapidly, although the roots reap the full benefit of its presence.

Plants with few or no roots at the time of potting should be firmly secured by means of stakes or wire pegs. The growing point or lead of an Orchid should be kept on a level with the surface; the back part of the plants is not of so much importance. If baskets are used, they should be of the kind made specially for Orchids. The bottom should be covered with pieces of crock and charcoal, and the compost pressed in as already advised. Ordinary pots or pans will answer for the cultivation of Orchids very well; but there are perforated pots, made specially for the purpose, which we much prefer for some kinds, such as Dendrobiums, Aërides, &c., because they allow a greater amount of air to circulate amongst the roots, keeping the compost sweet and clean. Some object to these pots on account of the shelter they afford to insects and other vermin that prey upon the roots of Orchids; but this is a minor evil, and may be readily overcome with a little extra vigilance.

Temperatures.

To enable readers to understand what is meant by such terms as *stove*, *intermediate*, *greenhouse*, or *cool-house*, when used in giving directions for treatment, the temperatures for each are tabulated here:

	Summer.		Winter.	
	Day.	Night.	Day.	Night.
	deg.	deg.	deg.	deg.
Stove	75	65-70	65	60
Intermediate or Cattleya house	70	60	55-60	55
Greenhouse or cool-house ...	60	55	55	50

It is not always possible, nor yet desirable, to follow these figures exactly, as, for instance, in very hot weather, the stove will sometimes run up to 80deg. or 85deg., and the cool-house cannot be got below 70deg. With care, however, these temperatures do no harm.

Shading.

During four or five months of the year—from April to August—the shading of Orchid-houses is a matter of great importance. There are very few Orchids indeed that require no shading, the exceptions being principally a few Dendrobiums from tropical Australia. The effect of the sun's rays passing through glass is to reduce the amount of light, and to create an increase in the temperature. The result is that those Orchids which, in a natural state, are exposed to the full blaze of a tropical sun, are unable to withstand the scorching heat of an unshaded glass-house in bright sunshine. Attempts have been made to grow Cattleyas without shading, but this can only be done in comparatively lofty houses, where the plants stand several feet from the glass, and a free circulation of air passes over them. Even then, during hot summers, the practice has been found disadvantageous.

For amateur cultivation, and for mixed collections, every house must be supplied with shading. The best material for the purpose is a thin, white canvas or netting. This should be nailed or otherwise fastened along the top of the house, and attached at the bottom to rollers, which can be let down and drawn up at will. It is a great advantage to have strips of wood or iron rods strong enough to support roller and blinds running from the top of the roof to the bottom, at a distance of about 6in. above the glass, thereby allowing a free circulation of air underneath. When the canvas lies flat on the glass it prevents the outward passage of the heated air at the top of the house.

For the intermediate and tropical houses fixed shading is not advisable, except at the ends and other places not covered by the blinds. For the cool Odontoglossum and Masdevallia house it may be used. In some establishments, indeed, it is the practice to thickly coat the glass with one of the various mixtures prepared for permanent shading, and thus the use of roller blinds is dispensed with. But where the saving of time is not so much an object, it is better to cover the glass with a thin film, and to use the blinds in addition during hot sunshine. Permanent shading has the disadvantage of keeping the plants unnecessarily dark during dull weather—a condition which certainly conduces to weak growth and few flowers.

About the end of March is the best time to fix up the blinds. It is during the earlier stages of growth that the greatest care is required. The sudden outbursts of bright sunshine, so characteristic of April and May, do much damage to the young growths if the direct rays are not warded off. As the leaves grow older and firmer in texture, they can withstand stronger sunlight; and as autumn approaches, shade may be altogether dispensed with. It should be clearly understood by beginners in Orchid-culture that, during the duller months, the more light Orchids get, the healthier they will be. The glass should be thoroughly washed, both inside and out, at the beginning of autumn; and in foggy districts, such as London, it will be necessary to frequently repeat this operation on the outside. It is an excellent plan to arrange together the various genera requiring a similar degree of shading. Thus, in the tropical house, the Dendrobiums, Catasetums, Mormodes, &c., which require more light than the majority of Orchids, may occupy one part where the blinds can be drawn up as soon in the afternoon as the sun's power begins to wane, without interfering with the requirements of such shade-lovers as Phalænopsis. Also, in the intermediate house, the Cattleyas, Lælias, &c., should occupy one part, and the Miltonias, Lycastes, &c., another.

Details on this, and other points with regard to treatment, will be found in the cultural notes for each genus.

Terrestrial Orchids.

Notwithstanding the fact that many of the Orchids which grow upon the ground in a wild state are found in strong soil, there are many experienced cultivators who prefer to use for these almost the same compost as is used for the epiphytal kinds when grown in pots or baskets. Peat and sphagnum form a perfectly safe compost for nearly all Orchids; if they will not thrive in that, then they will be a failure in any mixture. In some cases, as for instance Phalænopsis and Vanda, sphagnum only is used; in others, as in Cattleya, nearly all peat fibre is preferable; in Odontoglossum and Masdevallia the peat may be used in a natural state—*i.e.*, the fine particles need not be carefully shaken out. Amongst terrestrial kinds we have Cypripedium, which is a perfect success when planted in a mixture of peat and sphagnum; Masdevallia also. Sobralia does equally well in loam and peat, or in pure peat; Calanthe is grown in loam and cow-dung by some, by others in peat and sphagnum. To the beginner our advice is, Use peat and sphagnum for almost all Orchids—more or less of each according as the plant is epiphytal or terrestrial. If good peat is secured—and a great deal depends upon this—then no fear need be entertained as to its suiting all Orchids for which something more than pure sphagnum is required. Terrestrial Orchids do not require so much drainage as the epiphytes do; when growing, a weak solution of cow-manure may be given about once a week.

British Orchids require special treatment, the details of which will be given in the chapter devoted to them.

Watering.

When an Orchid is growing freely, it should be watered at the root often enough to keep the compost constantly moist, without its becoming stagnant or sour. A little practice soon enables one to understand how often this is. In houses where the atmospheric conditions are properly regulated, the plants do not dry at the root so quickly as when this is neglected. All Orchids require the atmosphere about them to be kept moist—almost at saturation point—whilst they are in active growth. This is provided by pouring water upon the stages, floors, and walls of the house several times a day. Amateurs had better not syringe their Orchids overhead till they have had some practice in their cultivation. In hot weather it is perfectly safe to dew the plants overhead late in the afternoon; but if the atmosphere is kept well charged with moisture, the syringe need not be used.

When growth is completed and ripened, most Orchids should be allowed to rest—*i.e.*, water should be supplied much less frequently, or not at all, and the atmosphere kept drier than when the plants were growing. But different kinds require different treatment in this respect, and the details will be best stated in the cultural notes for each genus. In a great many cases the production of flowers is altogether controlled by the kind of rest the plants get. No matter how strong and perfect the growth made, if the treatment during rest is not proper no flowers will be developed. When to water, and when to withhold water, are, therefore, questions of importance in the management of Orchids.

In every case soft, or *rain*, water should be used. For damping the stages, &c., ordinary tap-water answers; but for the plants at the roots, soft water should always be provided.

Ventilation.

Orchids require the same constant supply of fresh air as do other plants, and no more. Unfortunately, however, this is one of the requisites which is rarely understood by amateurs, and even by some professional growers. A plant is just as unlikely to continue strong and healthy in a badly-ventilated house as we ourselves are. Many builders of greenhouses are now careful to make arrangements for a constant supply of fresh air to the plants at all times, and in all seasons. Ventilation, as applied to plants, means two distinct things: (1) the regulation of temperature, and (2) the admission of fresh air. The former is frequently necessary during the summer, and only rarely in winter; the latter is necessary at all times. In the construction of plant-houses we should always bear these two points in mind. By fixing ventilators at the bottom of the house, below the level of the pipes inside, the air is compelled to pass over the warm pipes before it reaches the plants. As a rule, the glazing of houses is rarely so well done as to be airtight, and it is therefore seldom necessary to have permanent ventilators for the roof. But in well-built houses even this is a wise precaution. It cannot be too clearly understood, that to grow Orchids well they must be supplied with fresh air, which in cold weather should be slightly warmed before it comes in contact with the plants. When regulating the temperature by means of the ventilators, care should be taken to avoid anything like a sudden change. All the advantage possible should be taken of sun-heat. The temperature during bright sunshine may rise to 10deg. or even 20deg. higher than is necessary during dull weather. In the afternoon, the heat of the house should reach its maximum, and then fall gradually till the night temperature is reached by midnight. In opening the ventilators, the direction of the wind should be observed, and those on the windy side be kept closed, if convenient; otherwise the wind is apt to "lick up" the moisture in the house.

Insects and other Pests.

All Orchids are liable to the attacks of numerous insects and other enemies, such as scale, mealy-bug, green-fly, thrips, red-spider, cockroaches, woodlice, and small snails. A great deal depends on whether the plants are kept free from these, much watchfulness being necessary to keep some of them down. Perhaps the worst of all are thrips, which generally attack the young leaves before they are pushed out of the centre. They rarely come up out of the heart of the plant, the only indication of their presence being the discoloration of the leaves as they develop. To get rid of thrips, fumigation with tobacco, or washing the plants with tobacco-water, must be frequently done, and the plants should be examined after every dose of smoke, or insecticide, till the thrips are thoroughly eradicated. The same treatment answers for the destruction of red-spider and green-fly. Scale, of which several kinds are found on Orchids, can only be destroyed by removing them with a small brush or a sponge, using a solution of soft soap and tobacco to wash them. A good mixture is made as follows: To 1gal. of rain-water add 8oz. of soft soap, 2oz. of tobacco, and two tablespoonfuls of turpentine or paraffin. If the water is first boiled, and the mixture allowed to stand till it cools, and then strained through a piece of cloth, it forms an admirable and safe insecticide. Should any remain after use, it may be kept in a bottle for future use. Mealy-bug must be removed with a pointed stick, and the affected parts afterwards sponged to destroy any eggs that may be left.

Woodlice prey upon the young roots. They can be trapped by slicing potatoes, and laying the pieces where the woodlice come to feed. If examined every morning, the vermin will be found under the slices of potato. For snails, pieces of cabbage or lettuce leaf should be laid down, and examined every morning, when the snails will be caught. In the case of valuable or important plants showing flower-spikes, it is best to take the precaution of keeping the snails away. This may be done by placing the plant on an inverted pot, which should stand in a saucer of water, the saucer being wide enough to leave a margin of water all round the inverted pot, over which the snails cannot crawl. Stands made expressly for this purpose may be purchased for a few pence. This precaution also serves to protect the plants from cockroaches, which do much damage if not kept in check. Another good protection is afforded by surrounding the spikes at the base with a piece of cotton wool, which should be tied loosely. This cannot easily be crossed, either by snails, cockroaches, or woodlice. Beetle-traps or poison should also be laid down for the destruction of cockroaches. A very small snail, with a strong odour of onions, is often found in the sphagnum moss; and although so small, this pest is most destructive to flower-spikes, eating a small hole through the strongest in a single night. In preparing the moss for use, a sharp look-out should be kept for this little snail, which usually has a shell. Cleanliness is of the greatest importance to the health of Orchids, and, indeed, all plants; so that periodical cleanings should be insisted on if the numerous enemies of Orchids are not to destroy all chance of success.

Treatment of Newly-imported Orchids.

The peculiar conditions under which Orchids are found wild, the manner in which they are collected, and conveyed long distances in boxes, &c., by mule, boat, and steamer, together with the radical change they necessarily are compelled to undergo before they are established in gardens here, render their treatment on first arrival of considerable importance. Thousands of plants are sold weekly, at the auction-rooms and elsewhere, which are either immediately killed, or irrecoverably weakened by wrong treatment at the outset. As a rule, the roots of newly-imported plants are all dead, and few, if any, leaves remain on such as Odontoglossums, Dendrobiums, &c., although the pseudo-bulbs may be sound enough.

In selecting plants from a fresh importation, one or two important points should be remembered. These are: First, that the last-matured pseudo-bulb is healthy and uninjured, and bears at its base a sound eye (the latter is the incipient new growth, or lead, on whose proper development everything depends); secondly, that the plant has as much foliage as possible—the larger the specimen, the more leads it should have; and if the pseudo-bulbs are numerous and plump, the rhizomes sound, and the eyes perfect, nothing more need be desired. It is always better to begin with strong, promising plants than with scrappy bits, nine-tenths of which, in the hands of the amateur, would come to nothing. Cattleyas, Lælias, and other plants of similar habit, should have good green leaves upon them if successfully imported. Phalænopsis, Cypripediums, Aërides, Vandas, Masdevallias, and all other genera in which there is no pseudo-bulb, or a very weak one, should arrive with healthy leaves if they are to do any good.

To begin with, the plants should be carefully examined, and all dead roots, pseudo-bulbs, leaves, &c., cut away. A sharp knife should be used, and the operator must be watchful, lest in removing dead parts he at the same time break or cut away eyes or living roots. Too much care cannot be taken over this part of the work. The remaining parts should then be washed with soapy water. Plants with pseudo-bulbs should be placed in pots which have been two-thirds filled with clean, broken crocks. Stakes may be used to keep the plants upright. In watering, the crocks only should be moistened until new roots are pushed, when the plants should be potted in the mixture recommended for each kind, and treated the same as established plants, except that until the new growth is well above the surface the roots should not be kept too moist.

Plants which have no pseudo-bulbs require very careful treatment. They should be cleaned as already recommended, and then hung, head downwards, in a moist, shaded house, until the leaves are plump, and new roots are seen pushing. This precaution is necessary for the safety of the central eye, or "crown," which generally rots if moisture is allowed to lodge in the bases of the leaves. During the time they are suspended, the plants may be lightly syringed; but in a well-moistened house this is scarcely necessary. When plump, and showing signs of fresh growth, the plants may be taken down, and planted in the compost recommended for them. The temperature best suited to newly-imported plants is that in which they are grown when established; but they should be shaded from bright light, especially if they are at all yellow, and much shrivelled. When large quantities of a kind are to be started, a stage, or a bed of clean cinders, may be substituted for the pots with crocks, as it saves labour, and answers almost, if not quite, as well. Newly-imported plants must not be hurried, either by over-watering, by a high temperature, or by early potting, for these mean ultimate failure, although perhaps at first the plants look tidier. There is always a certain amount of excitement in the cultivation and flowering of an Orchid which has never been flowered in England before. Sometimes, too, very valuable varieties are obtained from imported plants; hence it is that so many growers prefer newly-imported to established Orchids.

It will be unnecessary to deal further in generalities in this place, because we purpose giving the peculiar treatment of each genus, or, indeed, of any particular species, where it may be necessary. But before closing these introductory remarks, we would urge our readers to remember that, if they are the happy possessors of one of those pretty little greenhouses or ferneries now so frequently to be found attached to villa residences, they have a place admirably suited to the requirements of many of the most beautiful Orchids from Guatemala, Peru, and New Grenada; and, as many of them are now established in this country in sufficient quantity to bring them within the reach of even those with limited means, we hope these remarks may induce many of our readers to add some of these gems to the pleasures of their homes and gardens.

CHAPTER II.

STRUCTURE AND OTHER PECULIARITIES.

BEFORE entering upon the description of those members of the Orchid family which we have selected for special consideration as garden plants, it will be well to give a slight sketch of the Order, and to glance at those points of structure by which it is distinguished. There is probably no Order in the whole Vegetable Kingdom the limits of which are more clearly defined; and there is certainly none which, within those limits, exhibits more variety than the one now before us in the colour, shape, or odour of its blossoms. It is in the structure of the flowers, too, that we find the features which specially characterise the Order.

It is not our purpose to go into a botanical disquisition upon the structure of an Orchidaceous flower; but there are one or two terms connected with it which are of constant occurrence, and may therefore be fitly explained here. In an ordinary regular flower, such as the Buttercup, we have, besides the stamens and pistils, two outer rows—one of *petals*, forming the *corolla*, and one of *sepals*, forming the *calyx*. In dicotyledonous plants, the calyx, speaking generally, is green, and the corolla coloured, so that they are easily distinguishable; but in such monocotyledons as the Hyacinth or Tulip, the petals and sepals are almost or quite undistinguishable, and the whole flower goes by the name of a *perianth*; the three outer segments being, strictly speaking, sepals, and the three inner, petals. In Orchidaceæ there is usually a marked irregularity in the shape of the flower, the nature of which will be made clear by the accompanying Figure. We have, outside, a row of three sepals (*s*, Fig. 1); then come three petals (*p*), two of which usually more or less resemble the sepals in shape and colouring, while the third petal (as we may consider it for practical purposes), which usually differs considerably in size, colour, and form, and is the lowest

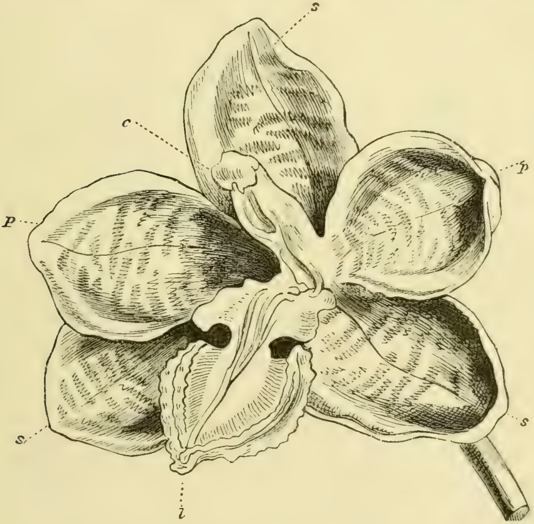
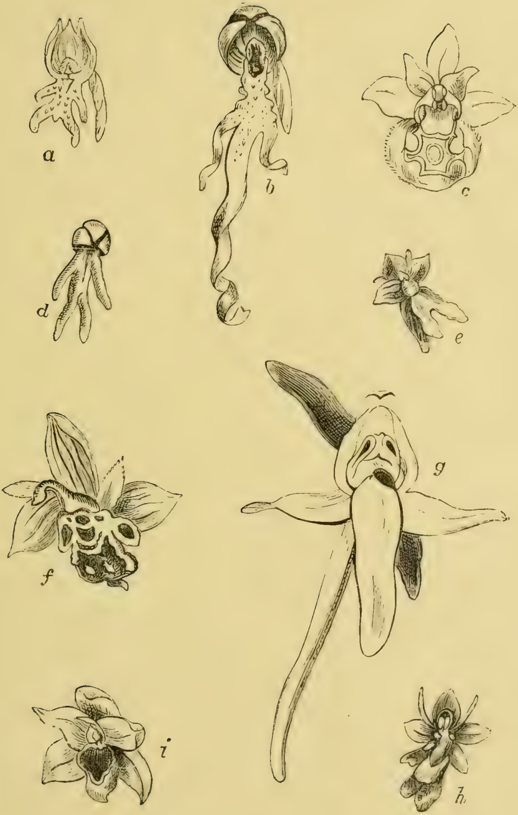


Fig. 1. Flower of Vanda Cathcartii

(nat. size).

in the flower, is known as the *labellum*, or lip (*l*). This *labellum* is sometimes prolonged backwards at the base into a tail or spur, which usually contains honey; in the wonderful Angræcum sesquipedale of Madagascar this spur is more than 1ft. in length. We shall see, as we proceed, something of the wonderful variety in form of this characteristic feature of an Orchid flower; and the accompanying group of the blossoms of a few of our British Orchids (see Plate) will give some notion of its extent in the natives of our own woods and fields. The other remarkable point in the flower of an Orchid is the *column* (*c*). In most blossoms the stamens and pistils are separate organs; but in the Orchids these are consolidated into a central, waxy, often club-shaped body, which is known by the above name. Except in Cypripedium, only one of the anthers is developed.

Orchids differ considerably in habit, in the form and character of the stem, and in the arrangement and configuration of the leaves. In habit there are the climbing Vanillas, the creeping Goodyeras; whilst some grow in reed-like tufts, others have an erect stem, with arching leaves, arranged in two regular rows on each side. Another group have no stem, but thick, fleshy leaves; and in others there is a creeping rhizome, from which stem-like growths are developed at intervals. These growths are what are known by the term *pseudo-bulb*. They are not stems, nor are they leaf-stalks, but they appear to be a sort of intermediate structure between the two. Usually only one pseudo-bulb is developed at the apex or growing point of each rhizome yearly, and this bears leaves either at its apex or all along its sides. From its top, or sides, or base, the flowers are developed, usually only once in the existence of each, sometimes for several consecutive years. In some genera the pseudo-bulbs are of only annual



FLOWERS OF BRITISH ORCHIDS

(nat. size).

a, Orchis militaris.
b, Orchis hircina (Lizard Orchis).
c, Ophrys arachnites.
d, Aceras anthropophora (Man Orchis).
e, Listera ovata (Twayblade).
f, Ophrys apifera (Bee Orchis).
g, Habenaria chlorantha.
h, Ophrys aranifera (Spider Orchis).
i, Epipactis palustris.

To face p. 18.]

duration, but in the majority they remain on the plant for an indefinite period.

Although infinitely more abundant in some regions than in others, Orchids are found in almost all parts of the world, except upon the verge of the frozen zone and in climates of excessive dryness. "In Europe, Asia, and North America," says Mr. Moore, "they grow everywhere —in groves, marshes, and meadows; at the Cape of Good Hope they abound in similar situations; but in the hot, damp parts of the West and East Indies, in Madagascar and the neighbouring islands, in the damp and humid forests of Brazil, in the warm, mild parts of Central America and Western Mexico, in the damp, tropical parts of India, and in the lower mountains of Nepal, they flourish in the greatest variety and profusion, not only seeking their nutriment from the soil, but clinging to the trunks and limbs of trees, to stones and bare rocks, where they vegetate among ferns and other shade-loving plants in countless thousands." The Orchids of temperate Australia and New Zealand are chiefly terrestrial, as are those of other temperate regions. They have fibrous roots, and often large fleshy tubers. Those of warmer countries are mainly epiphytes, not parasites, as they are often mis-called. A parasitic plant obtains its nourishment from the tree or plant upon which it grows, as is the case with the mistletoe; but an epiphyte merely uses the branch as a support or resting-place, gaining its food from the atmosphere which surrounds it.

Although small-flowered, and somewhat inconspicuous in stature, the species of Orchids which are wild in England are both pretty and interesting. Differing altogether from the Peruvian and Mexican beauties with which we are more especially concerned, they exemplify almost as thoroughly the extraordinary variety in form and colour for which the Order is so remarkable, and if not as strikingly beautiful are by no means to be despised, even from an ornamental point of view.

The knowledge of Orchidaceæ has grown during the last fifty years at a rate quite disproportionate to that of the rest of the Vegetable Kingdom. Linnæus only knew about a dozen exotic Orchids, and stated his opinion that the world, when fully examined, might probably yield as many as a hundred species. Now, at least 2500 are known to English horticulturists, while the number of species in the Order is estimated at 6000!

In colouring, as in odour, Orchids display an almost endless variety. Their rarest colour is blue, which, indeed, is almost unrepresented in collections—save, perhaps, in Vanda cærulea—although many purples in which blue predominates may be found. Several terrestrial Cape species, however, produce flowers of an intensely sky-blue colour, one of which was on this account appropriately named Herschelia cælestis by Lindley, in honour of Sir John Herschel, the astronomer. In one or two genera it is the leaves rather than the blossoms which attract the horticulturist, as in the case of the exquisite species of Anœctochilus and Goodyera, the rich green or purplish leaves of which are traversed by a beautiful network of gold or silver veins. Some species of Phalænopsis and of Cypripedium have prettily-marked foliage. On the whole, however, the Orchid family is conspicuously wanting in species with ornamental foliage.

The odours of Orchids are most diverse, varying even in the same species at different stages of its existence. Some have an especially delicious and almost overpowering fragrance, such as Aërides odoratum and Epidendrum aromaticum. Mr. Bateman enumerates only a few of the various odours which they represent when he likens the scent of Stanhopea grandiflora to that of a chemist's shop, that of Bulbophyllum cocoinum to cocoa-nut milk, of Oncidium ornithorhynchum to fresh hay, of Acropera Loddigesii to wallflowers, of Maxillaria atropurpurea to violets, of Aërides odoratum to pomatum, of Epidendrum anisatum to aniseed, of E. umbellatum to angelica, of Maxillaria crassifolia to noyeau, of M. aromatica to cinnamon, of Gongora atropurpurea to allspice, of Burlingtonia candida to citron, of Dendrobium moschatum to musk, and of Cycnoches Loddigesii to honey. Bulbophyllum Beccari and Masdevallia vilifera have a disgustingly fœtid odour. The odour of some—as of Epidendrum nocturnum and Brassavola nodosa—is only perceptible at night. Among our British Orchids there are several—such as the Butterfly Orchis (Habenaria chlorantha) and the Sweet-scented Orchis (Gymnadenia conopsea)—the fragrance of which is greatly intensified towards evening. Some species give out different scents at different times, such as Dendrobium nobile, which smells like grass in the evening, like honey at noon, and has in the morning a faint odour of primroses; while some, such as one or two species of Epidendrum, are fragrant in the morning and scentless at night. In others the fragrance is perceptible only in the evening. Our common British Purple Orchis (O. mascula) is remarkably variable in this respect—while faintly fragrant during the day, it is at night often so unpleasant in odour as to be unbearable in a room; but this varies much in different specimens. This list does not comprise more than a small fraction of the number of Orchids which have powerful odours. Indeed, it might almost be said that scentless Orchids are the exception.

CHAPTER III.

ACINETA.

A GENUS of stout-growing epiphytes with the habit of Peristeria or Stanhopea. They have egg-shaped, furrowed pseudo-bulbs, large, plaited leaves, and pendent racemes of large, handsome flowers. The sepals are broad and spreading, the lip is clawed, and the column long. All the known kinds are natives of tropical America and Mexico.

Culture.—As the flower-spikes are pushed in a downward direction from the base of the pseudo-bulbs, it is most convenient to grow the plants in baskets suspended near the roof. They should be planted in a mixture of peat fibre and sphagnum, with a few pieces of charcoal scattered through it. Not more than 3in. depth of soil is necessary for large specimens. They must be well watered in the growing season, and kept almost dry when at rest. A tropical temperature is best for them whilst growing, that of an intermediate, or Cattleya, house answering during the resting season. The flower-spikes are several months in developing from their first appearance, and the flowers last about a fortnight after expansion.

A. Barkeri.—Flowers in stout, pendent spikes, 1ft. long, numerous, large, fleshy, the petals and sepals incurved in such a way as to give the flowers a globose form; colour golden-yellow, with dark red spots on the lip. They are developed in summer. Native of Mexico. Syn. *Peristeria Barkeri.*

Botanical Magazine, t. 4203.

A. densa.—Flowers and spikes as in A. Barkeri, but larger and less rounded, whilst the petals are thickly dotted inside with red. They are developed in spring. Native of Central America. Syn. *A. Warscewiczii.*

Floral Magazine, t. 16.

A. Humboldtii.—A superb plant, of robust habit, with stout, dark green leaves, and pendent spikes, 2ft. long. The flowers are large and rounded, the sepals brownish-purple in colour, with numerous darker spots, the small petals and lip rosy-red, and the column whitish. Flowering time, spring. A native of Venezuela. Syns. *A. superba, Anguloa superba, Peristeria Humboldtii.*

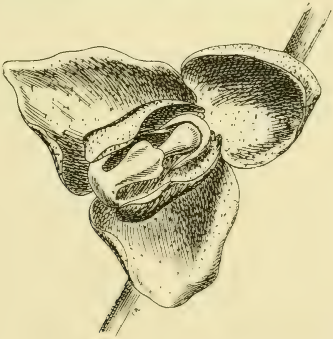


Fig. 2. Flower of Acineta Humboldtii
(⅔ nat. size).

Fig. 2; Botanical Register, 1843, t. 18.

CHAPTER IV.

ACROPERA.

A GENUS of epiphytes, with the habit of Stanhopea, but smaller, and bearing loose, pendent racemes of singularly-formed flowers. Except in collections which aim at being representative, none of the species are worth having.

Culture.—The plants should be treated as advised for Acineta, except that the Cattleya, or intermediate, house is the best position for them all the year round.

A. armeniaca.—Leaves lance-shaped, light green; spikes 1ft. long, pendent, bearing about a dozen orange-yellow flowers in the summer. Native of Nicaragua.

Botanical Magazine, t. 5501.

A. aurantiaca. — A compact plant, with green, lance-shaped leaves, spikes 1ft. long, and pendent. Flowers almost closed, bright apricot, developed in spring. New Grenada.

Botanical Magazine, t. 5435.

A. Loddigesii.—Habit as in the last-mentioned. Flowers curved inwards, very fragrant, tawny yellow, with a reddish lip. Flowering season, summer. Native of Mexico.

Botanical Magazine, t. 3563.

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CHAPTER V.

ADA.

THIS small genus is very nearly allied to Brassia; indeed, so closely does it resemble the latter genus, that many dozens of B. caudata have been sold for Ada, the error only being discovered when the plants have flowered. It differs, however, from Brassia in various technical details, especially in having the lip parallel with, and solidly united to, the base of the column. The following species is the only one known to cultivation. It is one of the prettiest of cool Orchids, the bright colour of its flowers being particularly effective.

A. aurantiaca. — A small plant, of erect habit, with somewhat cylindrical pseudo-bulbs, which taper upwards, and bear two or three linear, dark green leaves, about 5in. or 6in. in length. The flowers are borne in long, terminal, arching racemes, each of which produces from six to ten blossoms; the sepals and petals are narrow and pointed, and of a clear, bright, golden-orange colour, never expanding except at the tips. They are produced during February and March, and last several weeks in perfection. The plant is a native of New Grenada. It requires to be potted in peat and sphagnum in about equal parts. The drainage must be perfect, and during summer water must be given freely; and although in winter far less will suffice, the plant must not be allowed to get dry. Odontoglossums and Masdevallias are its natural associates, and it grows well with these plants under cultivation.

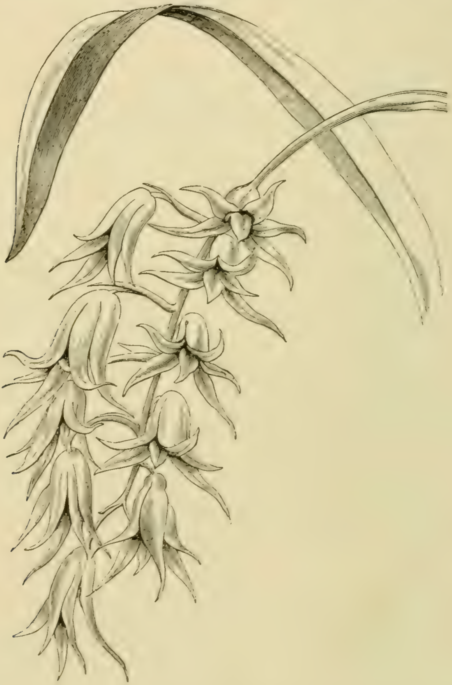


Fig. 3. Raceme and Leaf of Ada aurantiaca

($\frac{2}{3}$ nat. size).

Fig. 3; Botanical Magazine, t. 5435.

CHAPTER VI.

AËRIDES.

This is an extensive genus of Orchids, confined to the tropics of the Old World, and including many large and showy-flowered species. They are all epiphytes, growing upon the trees which overhang the rivers and streams, and forming in many instances strikingly beautiful objects. The strap-shaped, recurved leaves are arranged in two opposite rows, one facing the other. They are usually jagged or lobed at the apex, as if a piece had been cut out or broken off; in most of the species they are channelled down the middle, but in a few kinds they are terete or nearly cylindrical. All of them throw out large, fleshy roots from various parts of their stems, by which they absorb the moisture from the atmosphere. It is to this aërial mode of growth, so to speak, that the genus owes its name, which was bestowed upon it, towards the end of the last century, by a Catholic missionary in Cochin China, to whom we are greatly indebted for our knowledge of the vegetation of that region. He found there the plant which he named Aërides odoratum, and of which we shall speak hereafter, and called it Aërides on account of its being nourished, like the chameleon of fable, by aërial support alone. This plant, he tells us in his original description, published in 1790, has this wonderful property, that, when brought from the woods where it grows into a house, and suspended in the air, it will grow, flourish, and flower for many years without any nourishment, either from the earth or from water. "I would scarcely have believed this," he adds, "had I not had daily experience of it." The name Flos Aëris, or Air Flower, had, however, previously been applied to certain other epiphytic Orchids. The white, fleshy roots by which the cases of Aërides cling to their supports are in some species of very remarkable appearance. In one Indian plant they are long and flat, and resemble a tapeworm in appearance, whence the species has been named A. tæniale. The flowers, which are of a firm, waxy texture, and often very fragrant, grow in long, cylindrical clusters or racemes, which spring from the axils of the upper leaves; they are of various shades of white, lilac, and rose colour. The lip is curiously curved or opened, and affords a character by which the species may be divided into two sections. "In the first, represented in odoratum, the lip is cut into three, or even five lobes, of nearly equal length; in the other, represented in maculosum, the lip is undivided, or has only a couple of basal ears."

Culture.—From what is stated above, it may readily be seen that for these plants little or no soil is necessary, as they naturally grow upon the branches of the forest-trees; they may, therefore, be successfully grown upon blocks of wood, or in shallow baskets, in this country. Block treatment, however, should only be resorted to whilst the plants are young, or for newly-imported pieces. When established and healthy, it is safest to plant them in baskets, cylinders, or even pots, using abundance of drainage and a layer of fresh sphagnum at the top, placing a few of the roots in the moss, and leaving the others free. By this means a greater amount of moisture can be supplied to them; and the lower leaves remain on longer, and thus beautiful and symmetrical specimens are obtained.

If cylinders are used instead of baskets, they should be filled to within 2in. of the top with rough drainage, fixing the base of the plant by means of these. The sphagnum should then be pressed firmly about the top, to the depth of 3in. When the moss becomes old and worn out, it should be washed out and replaced with fresh; this may be done without interfering with the roots, which will be found firmly attached to the basket or pot. When the plants become old and leggy, they may be shortened by cutting away the base of the stem and planting the top in the moss. If possible, one or two of the stem-roots should be left on the piece after the removal of the lower part of the stem, otherwise there is danger of losing more foliage before new roots are developed. The safest time to perform this operation is February.

Mr. John Smith, who was for so many years Curator of the Royal Gardens, Kew, in the early days of Orchid-culture, adopted another method of growing Aërides. He says: "Many years ago we remember seeing Aërides odoratum in fine flower, its roots being attached to a moist brick wall, and as they adhere in like manner to the sides of garden pots, we have procured some tall, cylindrical pots (something like chimney-pots), round the margin of which we temporarily fix the plants; but they soon fasten themselves by their roots, gradually creeping over the surfaces of the pot, both within and without, and, by occasionally syringing the outside, and a little water inside, the porous earthenware is kept sufficiently moist to be congenial to the roots."

The Aërides are, as a rule, easily grown into handsome specimens, and usually blossom profusely, thus recommending themselves to all who cultivate Orchids. From early spring until the end of September they should be watered liberally, care at the same time being taken never to wet the flowers. During winter less water is needed, both at the root and in the atmosphere; but drought should never be carried far enough to cause the leaves to shrivel, a fair amount of flower, coupled with good leafage, being preferable to abundance of bloom at the expense of the health of the foliage. As we have before remarked, the Aërides are peculiar to the Eastern tropics, and therefore are usually classed amongst the Orchids which require tropical treatment. This is, to some extent, correct; yet they do not require the great amount of heat which many imagine, and which has until recently been given them. During the winter season we have succeeded by keeping many of the species at a temperature of 55deg. to 60deg., whilst during the growing season—that is, from April to September—the temperature is allowed to run up by sun-heat to 85deg. or 90deg., so long as a free circulation of air and a sufficiency of moisture are secured. Except when the sun is powerful, the temperature at this time should be 70deg. to 75deg. by day, and 70deg. by night.

A. affine.—This is an elegant species, of dwarf, erect habit, with pale green, leathery leaves, measuring about 1ft. in length, toothed at the ends, green, spotted with brown. The racemes are usually erect and branched. The flowers are pink and white, varying to rose, with deep rose-coloured spots; the sepals and petals equal, rounded at the apex; the lip is rhomboid and three-lobed, with a short spur and deeper colour. It blossoms during May and June. It is a native of Sylhet and Nepal, and was introduced in 1837. Syns. *A. multiflorum*, *A. roseum*.

Warner's Select Orchids, t. 21.

Var. *superbum* is stronger and larger than the type, and the flowers are better coloured.

These two kinds are not easily kept in health after they have been in cultivation a year or two. They should be grown in an intermediate temperature, and kept on the dry side during winter.

A. crassifolium. — This is one of the best and most popular of the Aërides. It is a free grower, with stout, erect stems, bearing thick, leathery, deep green leaves, about 8in. long, and drooping spikes of large, rose-purple flowers, the lip being almost purple. The sepals are oval, the petals recurved, and the lip is divided into three blunt lobes, the front one being large, tongue-shaped, and projecting forward. The flowers, which are deliciously fragrant, are produced in May and June, lasting several weeks if the plant is placed in a cool greenhouse when in bloom. It thrives if treated as recommended for Aërides generally. Native of Burmah, where it is very abundant, large quantities being imported annually into England.

Paxton's Flower Garden (new ed.), t. 1.

A. crispum.—This is a tall, robust plant, with an erect habit, producing an abundance of charming flowers. The deep green leaves are flat and broad, two-lobed, and about 8in. long; the stem is generally purple in colour. The racemes are more than double the length of the leaves, and the flowers are nearly 2in. in diameter; they are white, suffused with purplish rose, and very fragrant; the sepals and petals are ovate, and the lip is three-lobed, the middle lobe being very large, toothed at the base, and fringed at the margin; the horn-like spur is slightly incurved. This beautiful species blooms during May and June, and lasts a long time in full beauty if placed in a cool house whilst in flower. It was introduced from Bombay, and first flowered in England in 1842. It should be grown in an intermediate temperature.

Fig. 4; Botanical Magazine, t. 4427.

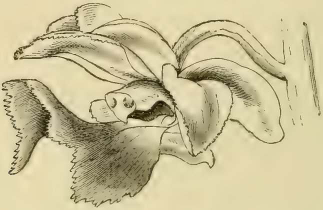


Fig. 4. Flower of Aërides crispum

(nat. size).

Several varieties of this plant are in cultivation, the best of which are as follow:

Var. *Lindleyanum* has large, much-branched panicles of flowers, with white sepals and petals, and a large, bright, rich rose-coloured lip; Var. *Warneri* has a slender stem, the short leaves are dark green, and the sepals and petals white, with a rich rose-coloured lip.

A. Emerici.—A recently-introduced plant, with the habit and general characters of A. virens, but the leaves are longer and narrower, and two-lobed at the tips. The flowers are white and rosy lilac, of medium size, and they are borne in drooping racemes. It is elegant, but not so handsome as many other Aërides. It flowers in the late autumn. Introduced from Burmah in 1882.

A. expansum.—A dwarf kind, with recurved, channelled, light green leaves, and unbranched spikes of white and rose-purple flowers. The lip is large and projecting, deeper-coloured on the middle lobe, and the spur is rather large and incurved. For small houses this plant is well adapted, as it grows and flowers freely if planted in a teak basket, and suspended near the roof-glass in a warm house. A native of India.

A. falcatum.—Well known in gardens, and a most distinct and beautiful species. In habit it resembles A. crispum. The leaves are nearly 1ft. long, and their colour is a peculiar blue-green. The racemes are pendulous and many-flowered; the sepals and petals are white, blotched at the apex with crimson; the lip is white at the sides, with a rosy crimson centre, ciliated on the front lobe; the spur is short, and parallel with the lip. It grows well under ordinary treatment, and flowers freely in May and June. It was introduced from India in 1846. Syn. *A. Larpentiæ.* Xenia, i., t. 92.

A. Fieldingii.—This handsome species is popularly known as the Fox-brush Orchid, on account of its long, curved racemes, which are densely furnished with flowers. It grows to a height of about 2ft., and the leaves are 8in. to 10in. long, broad, thick, and fleshy, and obliquely two-lobed at the apex, of a dark green colour, except at the base, which is brownish black in the portion which clasps the stem.

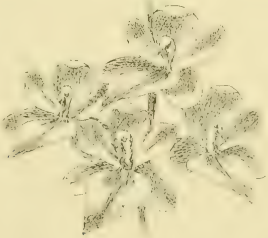


Fig. 5. Portion of Raceme of Aerides Fieldingii

($\frac{2}{3}$ nat. size).

The raceme is from 2ft. to 3ft. long, and sometimes branched; the numerous flowers are large and white, beautifully mottled with bright rose colour, the labellum being wholly rose-coloured. This is one of the finest of East Indian Orchids, and should be included in the most select collections. It blossoms during June and July, lasting for several weeks in full beauty. A native of Assam, Sikkim, &c.

Fig. 5; Belgique Horticole, 1876, tt. 18, 19.

A. Houlletianum.—A beautiful and very distinct species, of recent introduction. Unfortunately, it has not proved very satisfactory under cultivation. In habit it resembles A. virens, but the flowers are larger, and they are borne on dense racemes; the sepals and petals are yellowish, tipped with magenta at the apex, and the lip is creamy white, with a blotch of magenta on the front lobe, the side lobes being lined with the same colour. Introduced from Cochin China about 1875. It blooms in May and June, and it is considered a stove species. The late Mr. Spyers grew it well for a time, as also have others, but it does not long remain healthy.

Xenia, iii., t. 204.

A. japonicum.—A diminutive species, with short, narrow, leathery leaves, and drooping racemes, each bearing six or eight flowers, which are white, barred and spotted with purple. It thrives in the coolest house, and is interesting on that account. The flowers appear in June or July. A native of Japan.

Botanical Magazine, t. 5798.

A. Lawrencæ.—So far as is known, this is the grandest of all Aërides. It was introduced about three years ago by Mr. Sander, who sold a plant of it to Sir Trevor Lawrence, Bart., M.P., for the sum of 235 guineas. It may be called a gigantic form of A. odoratum, as in habit, leaves, and form of flower, it closely resembles that species. The racemes are 1ft. or more long, and bear numerous large, waxy flowers, with broad, upturned, pitcher-shaped spurs; the sepals are waxy white, becoming yellow with age; the petals are white, tinged at the tips with purple; the middle lobe of the lip is deep purple, the other parts of the flower being waxy white or green. It is impossible to convey anything like a true idea of the richness and beauty of the flowers by means of a description. The flowers are developed in September. Native of Burmah (?). Cultivation as for A. odoratum.

Fig. 6.

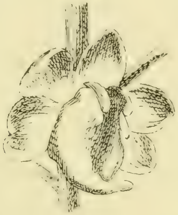


Fig. 6. Flower of Aërides Lawrencæ

($\frac{2}{3}$ nat. size).

A. Lobbii.—A handsome, free-flowering species, named in honour of Mr. Lobb, who discovered the plant in Moulmein about 1856. The leaves are strap-shaped, two-lobed at the apex, thick and fleshy in texture, about 1½ft. long, and of a light green hue. The spikes are long, pendulous, and branching. The sepals and petals are of a delicate rose, passing into white towards the base; the lip is of a bright rose, shaded with violet. The flowers develop in May and June, lasting long in beauty. This showy plant, of which many distinct and beautiful varieties are in cultivation, is one of the most ornamental of the genus. It thrives under ordinary treatment.

Williams' Orchid Album, i., t. 21.

A. maculosum.—This is a somewhat slow-growing plant, of a rather stiff, dwarf habit, and bearing large, handsome flowers. The leaves are thick and fleshy, rounded at the apex, 8in. or 9in. long, and dark green. The pendulous racemes are somewhat lax and branching. The flowers are large, with obtuse, pale rose-coloured sepals and petals, freely spotted with purple. The lip is flat, bluntly ovate, and of a deep rosy purple. The flowers, which are deliciously fragrant, are produced in June and July, and last about four weeks in perfection. Introduced from Bombay in 1844.

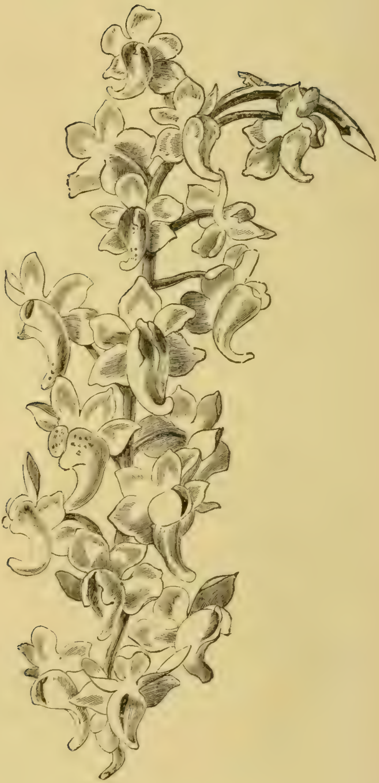
Botanical Register, xxxi., t. 58.

Var. *Schrœderi* is a much stronger grower, and larger in all its parts than the type. The flowers are white, tinged with rose-magenta.

A. mitratum.—A distinct and pretty flowered kind, remarkable on account of the narrow, almost rush-like, drooping foliage, the numerous thick roots, which spring from the base of the very short stem, and the dense, erect racemes of flowers, in which the sepals and petals are white, and the broad, obtuse lip is rose-purple. This species thrives best when grown on a raft or very shallow teak basket, with a small quantity of sphagnum about the base of the stem. It likes plenty of atmospheric moisture, and a position near the glass in a stove. Introduced from Moulmein.

Botanical Magazine, t. 5728.

A. nobile. — This is a very handsome, free-flowering plant, by many confounded with A. suavissimum. It may,



RACEME OF AËRIDES ODORATUM

(½ nat. size).

however, be distinguished from that species by its more robust habit of growth, its longer and more branched raceme, and by the three lobes of the lip being nearly equal in length, the middle lobe being tongue-shaped, and slightly bifid at the apex. The leaves are strap-shaped, notched at the apex, light green, slightly spotted with brown. The racemes are 2ft. or 3ft. long, much-branched, many-flowered, and pendulous; the flowers are very fragrant; the sepals and petals are white, tipped and spotted with bright rose; the lip is three-lobed, the side lobes being creamy-yellow and the middle lobe white, dotted with rose-purple. The spur is long and yellowish. The flowers develop from June to August. A native of India.

Warner's Select Orchids, i., t. 11.

A. odoratum. — This is a free grower, and although, perhaps, the commonest Aërides in cultivation, it may take rank amongst the most beautiful. The leaves are strap-shaped, recurved, and dark green. The racemes are longer than the leaves, many-flowered, and pendulous. The flowers are very fragrant, the sepals and petals creamy white, tipped with pink, and the lip three-lobed, the middle lobe being ovate and inflexed, the spur conical and incurved, and of the same colour as the sepals. It blooms in May, June, and July. The original A. odoratum was among the first of the tropical Orchids introduced to this country, having been sent to Kew Gardens, from China, by Sir Joseph Banks, in 1800. It is a native of various parts of India, and also of China and Cochin China, and is often cultivated in those countries for house decoration on account of the beauty and fragrance of its blossoms.

Plate; Botanical Magazine, t. 4139.

There are several varieties of this species; of these, *majus*, *cornutum*, and *purpurascens*, are the best.

A. quinquevulnerum.—This is a splendid species, of free habit and bold appearance. The leaves are strap-shaped, some 12in. long, tightly clasping the stem at the base, and of a bright, shining green. The raceme is longer than the leaves, pendulous, and many-flowered, the flowers being large, dense, and fragrant. The sepals and petals are rounded, white, marked with five reddish-crimson blotches (from which the species takes its name), and tipped with purple. The lip is cucullate, and funnel-shaped, the side lobes being erect, and the centre lobe oblong, incurved and serrated, of the same colour as the sepals; spur conical, green. It blooms during late summer and early autumn. It was introduced from the Philippine Islands, by Cuming, in 1838, and has since been found in Timor. This species resembles A. odoratum, but may be distinguished by its five reddish-crimson blotches. The blossoms are fragrant, their perfume resembling that of the Lily of the Valley.

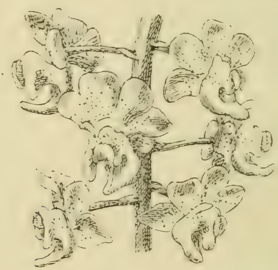


Fig. 7. Portion of Raceme of Aërides quinquevulnerum

(⅔ nat. size).

Fig. 7; Paxton's Magazine of Botany, viii. 241.

Var. *Farmeri* is of similar habit and growth, but the leaves are much darker, and the raceme is longer than in the type. The flowers are pure white and fragrant.

Both the type and the variety should be treated as stove plants. They like plenty of water always.

A. roseum.—This is a robust-growing plant, and a profuse blossomer. The dark green leaves are leathery, recurved, and channelled above, with a blunt, two-lobed apex. The raceme is pendulous, dense, and many-flowered, upwards of 1ft. in length. The sepals and petals are narrow, acute, and pale rose-colour, with darker spots; the lip is flat, entire, and acute, of a bright rose, and, like the sepals and petals, freckled with spots of a darker hue. This species is known to some as A. multiflorum, and in the "Botanical Magazine" it is figured under the name of A. affine. Some authorities class it as a variety of A. affine. It is a native of the plains of Moulmein, Silhet, and other parts of India, and was introduced in 1840. It flowers in June and July.

Botanical Magazine, t. 4049.

Var. *superbum.*—This has larger and deeper-coloured flowers, and the spikes are long and branching.

A. suavissimum.—A distinct, robust-growing plant, which will attain a considerable height when well grown. The leaves are flaccid, some 10in. long, light green, and profusely freckled with brown dots. The numerous flower-spikes are half-pendulous and branched, bearing a profusion of deliciously fragrant flowers. The sepals and petals are bluntly ovate, white, tipped or tinged throughout with deep lilac. The lip is three-lobed, the side lobes being oblong and serrated, and the middle lobe small and bifid; the whole lip is of a pale lemon colour, and the spur is rosy-red. This species flowers in June and July, and was introduced from the Straits of Malacca in 1848. It requires stove treatment all the year round.

Var. *aurantiacum* is much handsomer than the normal form.

It is more robust in growth, and the lip is of a deep, rich orange-yellow. It was introduced from Borneo about 1866.

A. Thibautianum.—This beautiful species in general appearance resembles A. quinquevulnerum, and the leaves have the same conspicuous stem-clasping habit; they are 8in. to 10in. long, unequally lobed at the apex, and deep green. The raceme is pendulous, longer than the leaves, and many-flowered; the sepals and petals are oblong and rose-coloured; the lip is bright amethyst, three-lobed—the side lobes are curved, and the middle lobe narrow and acute; the spur is conical and blunt. This species flowers in August and September, and is a native of Java, whence it was introduced in 1866. Syn. *A. Huttoni.*

A. vandarum. — This resembles Vanda teres in the character of its stem and foliage, but it is a much slenderer plant. The flowers are developed in pairs, on short, lateral spikes; they are pure white, 2in. across; sepals and petals narrowed to a stalk at the base, wavy and crisped at the margins; lip three-lobed, the two side lobes standing erect like a pair of ears, the front one very irregular and twisted; spur long, nearly straight. The plant should be fastened to a long block of soft wood or a teak raft, and suspended in a shady, moist corner of the stove. It likes plenty of water always. Native of India. Flowers in winter. Syn. *A. cylindricum.*

Botanical Magazine, t. 4982.

A. virens.—A free-growing, handsome-flowered species, with strap-shaped, channelled, recurved leaves, pale green in colour. The racemes are long, drooping, and many-flowered, the blossoms being deliciously fragrant. The sepals and petals are rounded and peach-coloured, tipped with rosy purple; the lip is large, the side lobes are toothed at the apex, white, dotted with crimson. This species begins to flower as early as April, lasting until July; it was introduced from Java in 1841. An easily-managed plant, requiring ordinary treatment.

Botanical Register, xxx., t. 41.

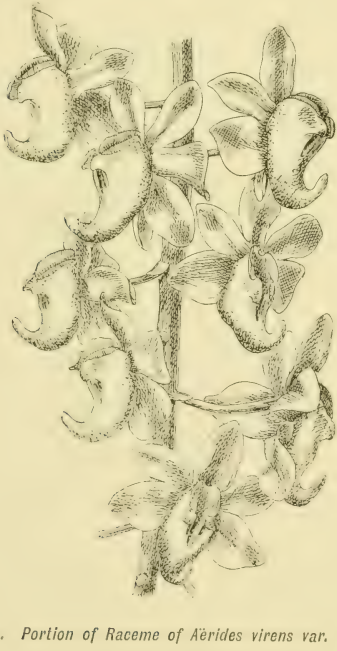


Fig. 8. Portion of Raceme of Aërides virens var. Ellisii

($\frac{2}{3}$ nat. size).

The following are well-marked varieties:

Var. *Dayanum.*—Racemes very long; flowers large, and bright in colour.

Var. *Ellisii.*—Leaves short and broad; racemes 1½ft. long; flowers numerous, large, brightly coloured.

Fig. 8.

Var. *grandiflorum.*—Flowers large, white, spotted with pink.

A. Wightianum.—This is a beautiful little plant, with flowers quite distinct from those of all the other known species. The leaves are strap-shaped, bilobed, with a small point between the lobes. The racemes are erect, longer than the leaves; flowers few, with a honey-like perfume. The sepals and petals ovate, of a soft, apricot-yellow hue; the lip is spurred and three-lobed, white and violet, dotted with lilac, and bearing a crested disc. It blossoms during the summer months, and is a native of India and Ceylon, whence it was introduced in 1843. Syns. *A. testaceum*, *Vanda parviflora*.

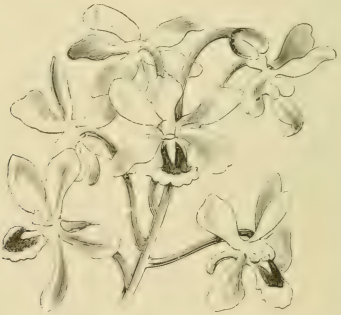


Fig. 9. Raceme of Aërides Wightianum
(nat. size).

Fig. 9; Botanical Magazine, t. 5138.

CHAPTER VII.

ANGRÆCUM.

SOME of the most remarkable Orchids known belong to this genus. The flowers are usually white, and, in many of the species, large and handsome. A large number of new additions have been made to the cultivated kinds in recent years, so that the genus now occupies a first place amongst tropical Orchids. Generally the habit of the plants resembles that of Vandas and Aërides, to which, indeed, they are botanically related. Some—such as, for instance, A. eburneum and A. giganteum—are very large and robust, others—such as A. falcatum and A. bilobum—being very diminutive. The flowers are borne on lateral racemes, which are sometimes branched; the sepals and petals are usually equal and spreading, the lip is broad and flat, and the spur is long and tail-like. Many of the kinds are very fragrant, and last several weeks in bloom. They blossom freely when in health, and, with few exceptions, are happy under cultivation. Nearly all the known kinds are natives of tropical Africa, and Madagascar or the adjacent islands.

Culture.—All the Angræcums being epiphytes, they require the same kind of treatment as Aërides, Vandas, &c. The strong, robust-growing kinds may be planted in pots half filled with drainage, the rest being filled with fresh sphagnum mixed with a few pieces of charcoal. The smaller kinds are best grown in teak baskets or pans, with a layer of drainage at the bottom, and sphagnum about the base of the stem. A few kinds thrive only when grown on blocks of soft wood or fern-stem. They all like plenty of water at the root all the year round. Except A. falcatum, all the known species require tropical treatment; none of them should be grown in a position exposed to bright sunshine.

A good many of the species of Angræcum which are grown by specialists are not of the kind which amateurs generally would care to have. The following kinds are what we consider the best of the genus:

A. caudatum.—A handsome plant, 8in. to 12in. high, with strap-shaped, recurved leaves, 10in. long, and horizontal spikes of flowers, arranged in two rows along the spike; sepals and petals brownish; lip large, pure white, with a long, projecting point, and a spur 9in. long, coloured brown. A pretty species, lasting in flower several weeks. It blooms in the autumn. Native of Sierra Leone.

Botanical Magazine, t. 4370.

A. citratum.—A small species, with spathulate, bright green leaves, on a short stem, and slender, horizontal spikes of small, jewel-like flowers, arranged with their faces upwards, creamy-white, the spur thin, greenish. One of the prettiest of miniature tropical Orchids. Native of Madagascar.

Botanical Magazine, t. 5624

A. eburneum.—A large, robust plant, 3ft. or more in height, with long, thick, strap-shaped leaves, of leathery texture, light green in colour. Flower-spikes erect, stiff, bearing numerous large flowers, in which the petals and sepals are narrow and green, whilst the broad, cordate lip is pure white; they last in perfection nearly two months, and emit a most delicious fragrance all the time. For large tropical houses this is certainly one of the most desirable of Orchids, as it rarely gets out of health, flowers regularly and abundantly, and is one of the most sweetly-scented. Native of Madagascar and the Seychelles. Flowers in winter. Syn. *A. superbum.*

Botanical Magazine, t. 4761.

Var. *virens* has smaller flowers, the lip being greenish white.

A. Ellisii.—A dwarf plant, with broad, tongue-shaped leaves, 10in. long, dark green, bilobed at the apex. Flower-spikes arching, 2ft. long, bearing from eighteen to twenty-four flowers, pure white, very fragrant; spur 6in. long, hanging downwards. One of the prettiest of the smaller kinds, and one of the sweetest-scented. Native of Madagascar. Flowers in winter.

Floral Magazine, t. 191.

A. falcatum.—A small plant, with narrow, channelled leaves, and short racemes of small, white flowers, which are fragrant and lasting. Winter. Native of Japan. This little plant requires the temperature of a cool, moist greenhouse.

A. Sanderianum.—A beautiful little plant, with shining green, tongue-shaped leaves, the margins tinged with red; length about 6in. Flower-spikes 1ft. long, drooping, and bearing two rows of snow-white flowers, 1½in. across; the sepals and petals spreading, the lip triangular, and the spur 3in. to 4in. long. Flowering season, early spring. Native of Madagascar. This is a delightful plant, very free-flowering, the spikes graceful and the flowers lasting; it grows perfectly if placed along with Phalænopsis.

A. Scottianum.—This is a distinct little plant, the stems being numerous, wiry, and usually twisted; leaves terete, about 4in. long, deep green. Flowers in pairs, on short, axillary spikes, each flower being 2in. across, pure white; the lip large and pointed, and the spur 6in. long, and yellowish. It blooms in mid-summer. Native of Comoro Islands. This species does best when grown on a block of soft wood or fern-stem, over a tank, in a tropical house. It requires abundance of moisture always.

Botanical Magazine, t. 6723.

A. sesquipedale.—This extraordinary plant has become famous as one of the Orchids which Charles Darwin was specially interested in, on account of the exceptional length of its spur. The stem is erect, and hidden by the clasping bases of the broad, recurved, strap-shaped leaves, which are deep green, keeled, 1ft. long, and bilobed at the apex. Flowers on axillary spikes—strong plants producing four flowers on each spike — ivory-white, 6in. or more across, waxy in appearance; the sepals and petals equal, overlapping at the base, narrowed upwards to a point; lip large, heart-shaped; spur as thick as a goose-quill, 1ft. to 1½ft. long. The flowers are generally produced in the early winter, lasting nearly a month; they are very fragrant. Native of Madagascar. This noble species requires tropical treatment, and abundance of water at the root.

Botanical Magazine, t. 5113.

CHAPTER VIII.

ANGULOA.

THE Anguloas are large, stately plants, with the habit of Lycastes, such as L. Skinneri, but more robust even than that plant. They have large, conical, furrowed pseudo-bulbs, broad, plaited foliage, and erect flower-spikes. The flowers are large, cupped, very waxy in substance, and attractive in colour. Their peculiar shape has led to their being likened to a bull's head. All the species are massive rather than graceful, and they owe their popularity to size, colour, and fragrance.

Culture.—These plants are easily grown, thriving in a greenhouse temperature all the year round. Pots or deep pans are most suitable for them, and these should be large enough to allow of a liberal allowance of soil, with plenty of drainage. They like abundance of water when growing, and when at rest they should not be allowed to get dry. The new growth springs from the base of the last-ripened pseudo-bulb, and the flowers develop along with it. When growth commences, it goes on rapidly, the large, handsome foliage unfolding almost as vigorously as leeks. The flowers last about a fortnight or three weeks, and emit a powerful fragrance. The leaves fall off the new pseudo-bulb as soon as it is ripe. The time most favourable for re-potting these plants is just when new growth appears. The roots should not be much disturbed. The most suitable compost is a mixture of turfy loam and peat, with a small proportion of fine dry cow-dung mixed with it.

A. Clowesii.—This is, perhaps, the largest-growing of the species with which we are at present acquainted, its broad, plaited leaves, and large, tulip-like, fragrant flowers rendering it at once a distinct and extremely handsome plant. The colour of the broad sepals and petals is bright yellow; the inclosed lip, which is white, tinged with orange, is remarkable in being balanced on a very delicate hinge, so that the slightest movement of the flower causes the lip to

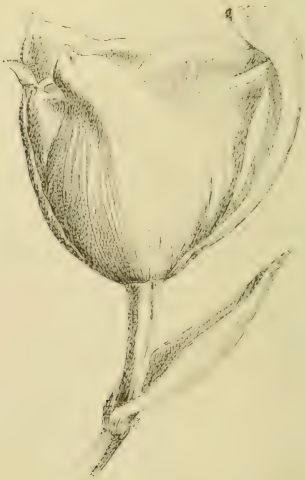


Fig. 10. Flower of Anguloa Clowesii

(½ nat. size).

rock backwards and forwards. It blooms in May and June. Native of Columbia.

Fig. 10; Botanical Magazine, t. 4313.

Var. *macrantha*.—Flowers larger, bright yellow, spotted with red. They are developed in July.

A. eburnea presents a similar appearance when growing to the previously-described species, but forms a beautiful contrast when in bloom, as its equally large, tulip-like flowers are pure white, saving a few pink spots upon the lip. It blooms during June and July, and is an extremely rare species. It is a native of New Grenada.

Williams' Orchid Album, iii., t. 133.

A. intermedia.—A hybrid raised by Messrs. Veitch, from A. Clowesii and A. Ruckeri. The flowers are large, pale yellow, spotted with rosy purple, the lip being cinnamon-brown, paler on the disk, and barred with purple. It is the only known hybrid Anguloa. It was flowered for the first time in 1888.

A. Ruckeri.—This species is scarcely so large as those already described. Flowers similar in size and shape, tawny yellow, profusely crimson-spotted; lip wholly crimson. It blooms during June and July, and is a native of Columbia.

Botanical Register, 1846, t. 41.

Var. *sanguinea* has the inside of the sepals and petals deep blood-red; it is very rare. Syn. *A. purpurea*.

A. uniflora.—This is a compact-growing species, similar in habit to the others, with clean, healthy foliage, and a profuse bloomer. The flowers are large, pure white, sometimes freckled with brown. It blooms in June and July, and is a native of Columbia.

Botanical Magazine, t. 4807.

CHAPTER IX.

ANŒCTOCHILUS.

THIS is a small genus of ground Orchids, related to our own native "Lady's Tresses" (Goodyera repens). Botanists describe about eight true species, referring all the others to allied genera, or reducing them to the position of varieties merely. Horticulturally, however, this arrangement is not easy to follow, and we therefore propose to describe under the name of Anœctochilus all those plants which are popularly known as such.

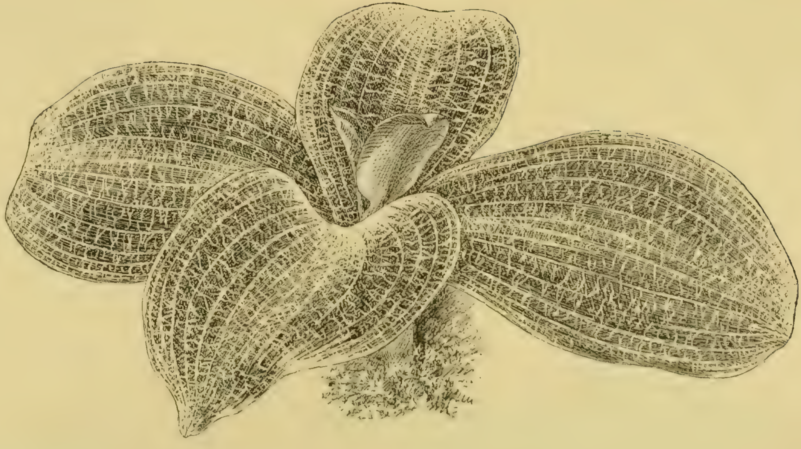
The flowers in these plants are so small and unattractive that they need not be described here. Indeed, most cultivators of Anœctochili prefer to remove the flower-spikes as soon as they appear, so as to prevent their exhausting the plant. All the kinds have short, fleshy, creeping stems, from which roots are emitted more or less freely on the lower side. The leaves are arranged in a rosette, or alternately on the stem, and vary in form from orbicular to lance-shaped; they are succulent, very tender, and usually their veins are picked out in rich and beautiful colours, golden, silvery, olive, and even rose-coloured reticulations often covering their whole surface. Under favourable conditions each leaf remains on the plant three, five, or even eight years, retaining the brilliancy of its colours the whole of that time. All the species are natives of tropical Asia, the most beautiful being found in Ceylon and Java.

Culture.—Although these plants have been in cultivation many years, and notwithstanding the painstaking care that has been expended upon them by both amateur and professional gardeners, their successful management in this country has never been quite accomplished. For a time—it may be two, or even five, years—they will grow and remain in health, and then suddenly they go wrong, the plants perishing one after the other in spite of all one can do. Of course, the same difficulty occurs in the case of other kinds of Orchids besides the Anœctochili, but the loss does not give nearly so much pain in the former case as in the latter, for one gets to love Anœctochili. Perhaps the most successful grower of these plants is a gentleman who now possesses a very fine collection of the best and rarest kinds, and whose only accommodation for them is a set of cases in the windows of his dwelling-house. This enthusiastic amateur has, however, been studying the habits and requirements of Anœctochili for over thirty years, and he declares to-day that they are still a mystery to him. But his ingenious and expensive contrivances are almost beyond imitation; we will therefore give the details of the treatment found most successful in the cultivation of a good collection of Anœctochili in the Royal Gardens, Kew.

The plants are kept in a large case in a stove, where they are shaded from all direct sunshine. The temperature during summer rarely falls below 70deg., or exceeds 80deg.; in winter it is about 70deg. by day and 60deg. by night. The atmosphere is always very moist. The plants stand on a layer of clean cinders, which are always saturated. The pots used are small ones, as the plants produce but few roots, and these are on or near the surface of the soil. As the stem increases in length, and develops new roots, more accommodation is needed; but it is safest to begin with thumb pots for weak or small plants, increasing the root-room as it becomes necessary. The compost used is a mixture of small lumps of fresh turfy peat, about the size of hazel nuts, some chopped sphagnum, a little good leaf-mould—not rotten, but just dead leaves—and a sprinkling of bits of broken red-clay brick, the size of peas. The pots or pans should be half-filled with clean crocks, and the compost should not be pressed tightly about the roots, but be simply shaken together. After re-potting, the soil should be well watered, and kept moist, but not saturated. It is not advisable to water the leaves of the plants overhead. When a plant shows signs of ill-health, it should at once be carefully washed at the root, examined for rot, all the bad parts cut away, and what remains be placed on the top of moist, clean sand, in a frame, till it commences to make fresh roots. Healthy plants, when long enough, may be divided into several, cutting away the top just below the last new root, and dividing the remainder of the stem as often as may be done with safety. Thrips and red spider sometimes attack these plants; they must be washed off with a solution of tobacco and soft soap.

Where few plants are grown, small bell-glasses should be used instead of the frame, placing one over each plant. Those glasses with a hole through the top are the most suitable for the purpose.

A. concinnum.—A beautiful little plant, the leaves being 5in. long by 3in. broad, gradually narrowed to a point at the apex, rounded at the base; the ground-colour is deep olive-green, through which run stripes and a network of a coppery-red colour. Native of Assam.



ANŒCTOCHILUS LOWII

($\frac{2}{3}$ nat. size).

A. Dominianum.—A hybrid raised by Messrs. Veitch and Sons from A. xanthophyllum and Goodyera discolor. Stem ¼in. thick, fleshy; leaves 2½in. by 1½in., ovate, olive-green, streaked and flaked with apple-yellow. This plant is one of the handsomest members of the genus, but it is very rare.

A. intermedium.—This is probably a robust variety of A. Roxburghii: It has an erect stem, 3in. or more long; leaves 2½in. by 1½in., the surface coloured bronzy-green, with a silky sheen, the midrib marked with a band of grey at the base, and striped and veined with shining gold. A native of Ceylon.

A. javanicum.—A large-leaved, prettily-marked kind, not unlike A. Lowii in habit and size; indeed, it is sometimes called a green form of that species. It differs, however, very markedly in having thinner, longer leaves, and in colour. In good examples the leaves of A. javanicum are 4in. long by 2½in. broad, suddenly narrowed at both ends; the colour is apple-green, with numerous transverse veins of silvery grey; the under surface is tinted with rose. Native of Java. Syns. *A. Veitchii, Argyrorchis javanica*, *Macodes javanica.*

Botanical Magazine, t. 7037.

A. Lowii.—The largest and one of the most beautiful of all Anœctochili. When well managed it grows 6in. or more high, with a crowded rosette of leaves, 4in. long by 3in. wide, their texture being thick and succulent. The ground-colour of the upper surface is dark, velvet-green, shaded with brown, and beautifully lined and veined with pale gold. The under surface is pale yellow, tinged with rose. Native of Borneo. Syn. *Dossinia marmorata.*

Plate.

Var. *Dayi* has deep olive-green leaves, with the reticulations of a coppery-red colour.

Var. *virescens* has smaller leaves, of a paler shade of green.

A. Petola.—A very beautiful species, and, moreover, one which is easily cultivated. It grows rapidly, forming stems 6in. or more long, which are clothed with oval leaves, 3in. by 2in., fleshy in texture, the surface a soft, mossy, shining green, the veins being of a pale golden, sparkling colour.

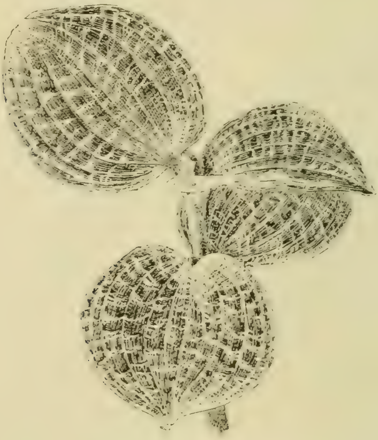


Fig. 11. Anœctochilus Petola

(⅔ nat. size).

There are several fine examples of this charming little Orchid in the Kew collection. In Java it is exceedingly plentiful, but from the nature of its stems it is difficult to import alive. Syn. *Macodes Petola.*

Fig. 11.

A. Reinwardtii.—A delicate little plant, with thin, watery stems, bearing roundish leaves about 1½in. long, the surface coloured deep bronze, with a velvet-like sheen, and thickly covered with interlacing lines of deep, shining gold. This is a perfect little gem when in good health. It is a native of Java.

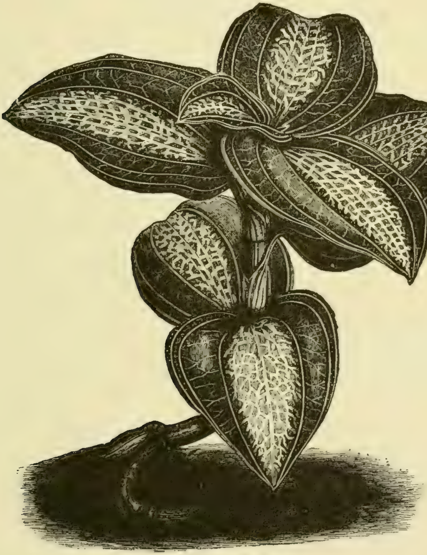


Fig. 12. Anœctochilus xanthophyllum

(⅔ nat. size).

A. Roxburghii.—Stem 3in. to 6in. long, very fleshy; leaves 2½in. by 1½in., ovate, the surface deep, bronzy green, with a broad band of silvery grey running along the midrib, from the base almost to the apex; veins shining, coppery red. A beautiful plant, which was once fairly common in gardens, but is now rarely seen. It is a native of the Malaya region.

A. setaceum.—This is known in Ceylon as the King of the Woods (Wana Rajah), and in England it is considered the most beautifully variegated plant known. The soft, velvet-like brown of the leaves and the thick reticulation of sparkling gold baffle description, nor can they be truthfully represented by the artist. Some of the forms are much more beautiful than others, that known as *cordatum* being, perhaps, the finest, the variety *regale* being almost as fine. The best varieties are natives of Ceylon and Singapore, the poorer kinds coming from the Neilgherries.

A. xanthophyllum.—A strong, free-growing plant, with the habit of A. Petola, but slightly longer and more pointed in the leaves. Strong plants produce leaves 2½in. long and 1½in. wide, rather fleshy, and coloured very dark velvety green, with reticulating lines of pale green and yellow, and a central area of bands of pale gold. This species is a native of Ceylon, where it grows in moist woods in shady places, along with *A. setaceus.* Syn. *A. Frederici-Augusti.*

Fig. 12.

CHAPTER X.

ANSELLIA.

A SMALL genus of tropical African Orchids, with the habit of a large Dendrobium, and the flowers of a Cymbidium. The pseudo-bulbs are stout and woody when old; they vary in length from 1ft. to 4ft., and they bear about a dozen leaves near the apex. The flowers are borne in large, branching panicles, usually from the apex, but sometimes from the sides of the pseudo-bulbs. Each flower is about 2in. across; the sepals and petals are equal and spreading, and the lip is three-lobed. The colour is some shade of yellow, with blotches of brown. The genus is named after Mr. John Ansell, who discovered it in Fernando Po growing on the stem of a palm-tree.

Culture.—These plants require tropical treatment all the year round. They should be planted in pots or pans half full of drainage, using as compost peat fibre and sphagnum. Whilst growing they require plenty of water, both at the root and overhead; and they should have as sunny a position as is possible in the tropical house. When growth is finished less water should be given. The time to re-pot is just as new growth commences. As these plants root freely, they should be allowed plenty of pot room.

A. africana.—Pseudo-bulbs 4ft. high; leaves 1ft. long, with prominent ribs; panicles large, branching; flowers pale yellow, spotted with brown. Strong plants produce as many as fifty or more flowers in a panicle, and these remain six weeks in perfection. They are developed in winter. Native of Sierra Leone.

Fig. 13; Botanical Magazine, t. 4965.

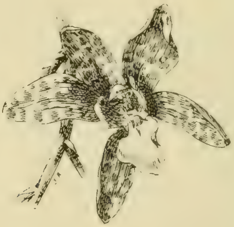


Fig. 13. Flower of Ansellia africana

($\frac{2}{3}$ nat. size).

Var. *congoensis* has shorter pseudo-bulbs and smaller flowers, their colour being deep yellow, with pale brown blotches. Congo.

Var. *gigantea* has small, yellow, unspotted flowers, and short, stout pseudo-bulbs. It is also known as *Cymbidium Sandersoni.* Natal.

Var. *nilotica* has pseudo-bulbs about 2ft. long, and large flowers of a deep yellow colour, with large blotches of dark brown. It is the finest of all known Ansellias. Upper Nile regions.

CHAPTER XI.

BARKERIA.

A GENUS of small, thin-stemmed Orchids, related to Epidendrum. The pseudo-bulbs are fusiform, usually springing from each other, with numerous stout roots and a few strap-shaped leaves, which latter fall off when the growth is ripened. The flowers are in erect racemes, which spring from the top of the ripened pseudo-bulbs, and they last several weeks under favourable conditions. In form and structure they are similar to the bulk of Epidendrums. All the species are natives of Central America.

Culture.—These plants thrive best when fastened on to a few twigs of thorn or apple, which should be stuck in a teak basket of moss, and suspended near the roof-glass, in an unshaded part of the intermediate house. When growing they should be dipped overhead in water at least once a day. As the leaves fall off, the supply of moisture should be reduced, and finally withheld altogether till growth re-commences. Naturally we believe these plants grow on low, twiggy bushes near streams, or where for a part of the year there is a copious rainfall. Some growers recommend placing these plants out of doors in a moist, sunny position during summer.

B. elegans. — A charming little plant, with slender pseudo-bulbs and pale green leaves. The racemes are small, and the flowers 2in. across; sepals and petals broad and spreading, coloured rosy lilac; lip spoon-shaped, 1in. long, white, dotted with crimson, with a large blotch of maroon-crimson in front; column broad, winged, spotted like the lip. It blooms in spring. Native of Mexico.

Botanical Magazine, t. 4784.

B. Lindleyana.—Pseudo-bulbs 1ft. long, as thick as a goose-quill. Racemes long, erect, bearing numerous large, delicate flowers, similar in form to those of B. elegans, but rosy purple in colour, the large blotch of purple on the lip being accompanied by one of white. The flowers appear in autumn. Native of Mexico and Costa Rica.

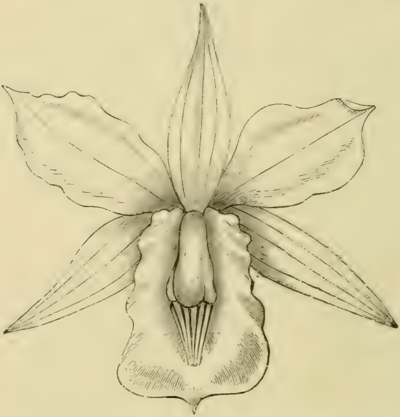


Fig. 14. Flower of Barkeria Lindleyana

(nat. size).

Fig. 14; Botanical Magazine, t. 6098.

B. Skinneri.—Habit as in B. Lindleyana. Flower-spikes erect, nearly 2ft. long, bearing a score or more flowers, which are as large as in B. elegans, and soft rose in colour, paler on the lip. They are developed in October and November. Native of Mexico and Guatemala.

Botanical Magazine, tt. 3951, 4094.

B. spectabilis.—Pseudo-bulbs numerous, small, branching, seldom exceeding 4in. in length, and each bearing two small, fleshy, green leaves; raceme semi-erect, bearing from six to twelve flowers, each about 3in. across; colour pale rosy lilac; lip white at the base, rose-coloured in front, and dotted all over with small red dots. When well grown this species is a most attractive Orchid. The flowers appear in mid-summer, and they remain fresh on the plant about a month. Native of Mexico and Guatemala.

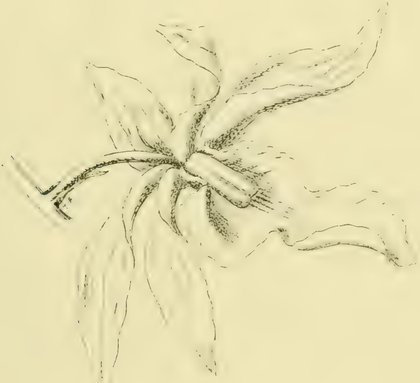


Fig. 15. Flower of Barkeria spectabilis

(⅗ nat. size).

Fig. 15; Botanical Magazine, t. 4094.

CHAPTER XII.

BATEMANNIA.

THIS is a genus of dwarf epiphytes, compact in habit, and, with few exceptions, free-flowering and showy. They have very short pseudo-bulbs, clothed with broad, stout, flag-like leaves, usually arranged in two opposite rows. The flowers are large, and occur singly, or in pairs (rarely more), on recurved peduncles. The genus is related to Zygopetalum.

Culture.—These plants require the same temperature as Cattleya Mossiæ, and may be grown either in pots, in a compost of peat fibre and sphagnum, or on rafts of teak with sphagnum placed about the roots. Where there is plenty of room for suspending the plants from the roof, the use of rafts is preferable. Abundant supplies of moisture, both at the roots and in the atmosphere, are needed during growth. In bright summer weather the leaves must be protected by shading.

These plants grow in very shady woods, where rain falls almost daily and where they are always protected from intense sunshine. They therefore cannot be easily over-watered under cultivation if the compost at the root and other conditions are satisfactory. Thrips must be kept from them.

B. Burtii.—This is a beautiful and striking species, with dark green leaves, 12in. or 14in. in length, and 2½in. in breadth. The flowers are borne singly, and measure 3in. to 4in. in diameter. The spreading sepals, which have a somewhat triangular shape, are of a reddish-brown colour, spotted with yellow, the base being wholly yellow. The petals only differ from the sepals in having a few purplish streaks at the base. The lip is 1in. long, trowel-shaped, and white, except towards the apex, which is a dark brownish purple; it is attached to the base of the column by a hinge-like projection, and this bears an erect, comb-like fringe. The column is fleshy, white, winged and hooded. Introduced from Costa Rica in 1872.

Botanical Magazine, t. 6003.

B. Meleagris.—A rather scarce but very handsome and interesting species, with broadly lance-shaped leaves, 1ft. in length, arranged in opposite rows. The peduncles spring from the axils of the leaves, and each bears a solitary flower, 3in. or 4in. across. The sepals and petals are similar in shape, broad at the base, their colour being pale yellow, changing in the upper half to purplish brown. The lip is about half as large as the petals, and is white at the base and purplish brown in front; there is a curious crescent-shaped fringe of stiff, yellow hairs in the throat. This species flowers at mid-summer, and is a native of Brazil. Syn. *Huntleya Meleagris.*

Botanical Register, 1839, t. 14.

B. Beaumontii, *B. Colleyi*, and *B. grandiflora*, are also in cultivation, but their flowers are dingy and unattractive.

CHAPTER XIII.

BLETIA.

A LARGE genus of terrestrial or epiphytical Orchids, several species of which are highly ornamental, and especially valuable because of the abundance and bright colours of their flowers. They are related to Phaius, and are natives of tropical America, China, and Japan. The plants are characterised by having round or flattened pseudo-bulbs, clustered on a creeping rhizome, and bearing from the top several long, narrow, plaited leaves, which fall off in autumn. The name Bletia has also been given to a section of what is now known as Lælia—as, for instance, Bletia Perrini, now called Lælia.

Culture.—Bletias are not difficult to cultivate, requiring liberal treatment when growing, and after that a long season of rest. The most suitable compost for them is a mixture of fibrous yellow loam and decayed leaf-soil, with a little silver sand. The kinds described below being truly terrestrial, the pseudo-bulbs should be buried just beneath the surface of the soil; about 2in. of drainage is sufficient. These plants may be grown in the cool-house or in a heated frame. In well-established specimens occasional applications of weak manure-water will be found beneficial. After flowering, the plants may be placed out of doors, plunging the pots in ashes, and leaving the leaves exposed to full sunshine. They should be taken indoors on the approach of cold weather, and be kept on the dry side until new growth appears.

B. hyacinthina.—This is a useful and handsome species, and one of the hardiest; indeed, in favoured situations it has been grown outside. In the cool Orchid-house, its rosy-purple, graceful flowers produce a charming effect, and it well merits the little care necessary to grow it successfully. The leaves are long and plaited, and in spring, when the plant is in bloom, are of a beautiful pale green, forming an

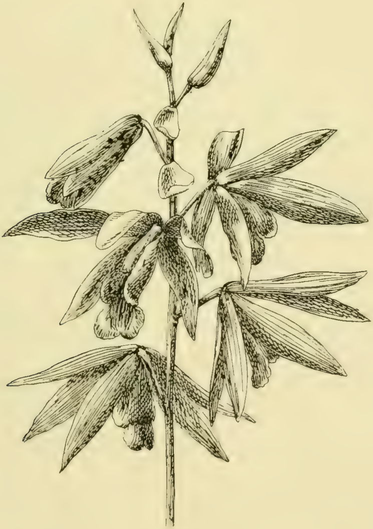


Fig 16. Portion of Raceme of Bletia hyacinthina
(½ nat. size).

admirable background for the rosy-purple flowers. The flowers are numerous, on scapes about 1ft. high, each flower measuring 2in. across; the lip is white, streaked and edged with crimson. Introduced from China in 1802. Syns. *B. gebina*, *B. japonica*.

Fig. 16; Botanical Magazine, t. 1492.

B. patula.—This handsome plant has roundish pseudobulbs 2in. in diameter, and plaited leaves 1½ft. in length. The flower-spike rises from the young growth in March, and grows to 3ft. in height, bearing about a score of reddish-lilac coloured flowers, each upwards of 2in. across. The base of the lip is white, as are also the six ridges occurring on the disk. During growth this plant requires a warmer atmosphere than the others, and should be placed with the Cattleyas. A native of the West Indies; introduced in 1830.

Botanical Magazine, t. 3518.

B. Shepherdii.—A strong-growing species, producing its long, branching spikes of flowers during the winter months. The leaves are broadly lance-shaped, and about 1½ft. long; the flowers are of a uniform deep purple colour, except the centre of the lip, which is dull yellow. A native of Jamaica; introduced in 1825.

Botanical Magazine, t. 3319.

B. Sherrattiana.—This species is probably the prettiest of all. Its pseudo-bulbs are flattened, 2in. in diameter, and carry three or four plaited leaves, which taper towards either end. The flowers are of delicate texture, but large and showy; they are produced towards the top of an erect spike, 3ft. in height, twelve or more flowers occurring on a spike. The sepals and petals are of a bright rosy-red colour, and about 1in. long, the former being oblong in shape, and bluntish, and the latter being twice as broad, and rounded. The lip is three-lobed, of a deep rosy purple, with three parallel, golden-yellow, raised lines, traversing the white centre. Introduced from New Grenada in 1867.

Botanical Magazine, t. 5646.

B. verecunda.—An interesting plant, which is now and again imported and offered as new. It was the first introduced of all exotic Orchids, having been cultivated in England by Collinson in 1731. It has flattened, underground pseudo-bulbs, tall, plaited, grass-like foliage, and erect, branching racemes 2ft. to 3ft. high, bearing numerous reddish-purple flowers. Compared with others here described, it is not beautiful, but it is worth growing for the sake of its historical interest. It requires a warm-house temperature, and blooms in summer. A native of Florida and the West Indies. Syns. *B. acutipetala*, *Limodorum altum.*

Botanical Magazine, t. 3217.

CHAPTER XIV.

BOLLEA.

THIS genus consists of a small group of Orchids regarded by some botanists as Zygopetalums, but so distinct as to justify us in keeping them separate here. They have short, erect stems (not developing into pseudo-bulbs proper), bearing the sheathing leaves in opposite rows, and single-flowered, erect scapes. The flowers are full and large, usually 3in. to 4in. in diameter, with broad sepals and petals, a prominent crest on the lip, and a short, stout column.

Culture.—Bolleas require warm-house treatment, and enjoy a *shaded* position, near the glass. They are found to succeed best on pieces of soft fern-stem, or, where that cannot be obtained, on blocks or rafts of teak, which should hang horizontally. The roots should have a little sphagnum placed about them, and frequent dippings overhead are necessary during the period of growth; in hot weather the plants should be looked over both night and morning. Thrips are apt to infest these plants, and soon do serious damage, so that, on the slightest indication of their presence, tobacco-dust or tobacco-water should be at once applied.

B. cœlestis.—A bright and distinctly-coloured species, well worth cultivating on account of its unusual tints, which, if not actually the much-coveted blue, are a near approach to it. The peduncle is 1¼ft. to 1½ft. high, and bears one flower, which is sometimes 4in. in diameter. The oblong, pointed sepals, and rather smaller petals, are light blue at the base, changing to mauve in the middle and white at the tips. The lip at the front is a beautiful deep violet, with a large, yellowish callus at the base. The column is purple-blue and boat-shaped. This species flowers during the summer months, and is a native of Colombia. Introduced in 1878. Syn. *Zygopetalum cœleste.*

Botanical Magazine, t. 6458.

B. Lalindei.—A distinct and handsome species, producing flowers 3in. in diameter, on one-flowered scapes, and having broadly lance-shaped leaves, 1ft. long and five-nerved. The sepals and petals are rose-coloured, with greenish-yellow tips; the lip is golden-yellow, with recurved margins, and the arching column is very broad and rose-coloured. According to different published descriptions, there appears to be a variation in the colouring of the flowers. Professor Reichenbach describes them as having sepals and petals of bright violet, lip deep orange, and column deep purple. The first, however, is the form we have met with. Introduced from New Grenada in 1874. Syn. *Zygopetalum Lalindei.*

Botanical Magazine, t. 6331.

B. Patinii.—A desirable species, somewhat resembling the preceding, but with larger, though less brightly coloured, flowers. From the base of the broad, nerved, and pointed leaves, spring the decurved flower-scapes, each bearing one flower. The sepals and petals are oblong in shape, wavy, and rose-coloured, the lower side of the two lateral sepals being deep rose. The lip is short and yellow, and above it curves the broad, pink column. This species was found in the forests of New Grenada in 1873. Syn. *Zygopetalum Patinii.*

Gardeners' Chronicle, Jan., 1875, p. 9, Fig. 1.

CHAPTER XV.

BRASSIA.

THIS genus includes about twenty species, which are somewhat widely distributed over tropical America. There is very little difference, in a botanical sense, between Brassia and Oncidium, some botanists uniting the two under the latter name. Horticulturally, however, Brassia is very distinctly characterised by the long, tail-like form of its sepals and petals, and by the absence of wings from the sides of the column. All the cultivated species are robust, free-growing plants, very similar to some Oncidiums in habit, and when strong they flower every year. The flowers are not remarkable for any brilliancy of colour, but they find many admirers on account of their large size and spider-like form.

Culture.—These plants succeed in either pots or pans; the drainage must be thorough, and they should be potted in good fibrous peat, with a little sphagnum and sand added. They should be placed in the warm end of the Cattleya or intermediate house, and be liberally supplied with water during the summer. In winter, still keep them in the same position, and give just sufficient moisture to prevent the pseudo-bulbs from shrivelling. The flowers remain in good condition a long time on the plants.

B. antherotes.—A handsome, free-growing plant, with healthy, green foliage, and stout flower-spikes, sometimes 2ft. or more in length, bearing many flowers, each 7in. across; the sepals are long and narrow; petals only half as long, yellow, brownish black at the base; lip triangular, yellow, barred with brown. Brazil (?). Introduced in 1879.

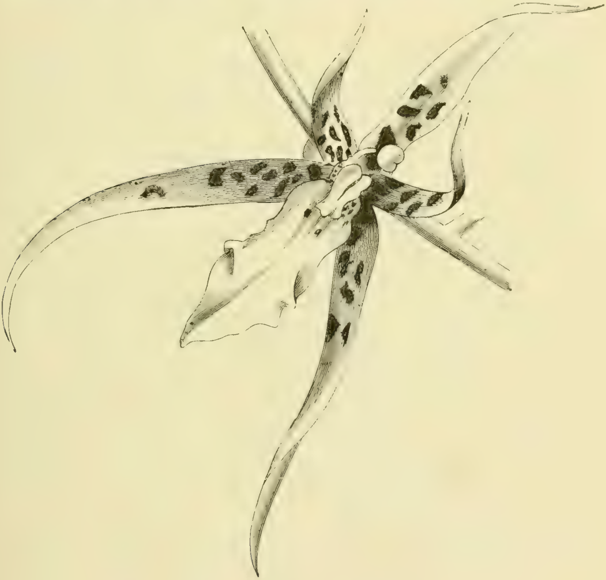


Fig. 17. Flower of Brassia Lanceana
($\frac{2}{3}$ nat. size).

B. Gireoudiana.—A fine, bold-growing species, producing its many-flowered scapes of singular and beautiful flowers during the spring and early summer. The remarkable lengthening-out of the sepals, which is so characteristic of Brassia, is well exemplified in this species. In general character it resembles B. Lanceana, the sepals and petals being bright yellow, spotted and blotched with deep red, and the lip similarly coloured. Native of Costa Rica.

Xenia, t. 32.

B. Lanceana.—This is a plant of robust growth, with dark green pseudo-bulbs and leaves, and a many-flowered scape. The narrow, tapering sepals and petals are bright yellow, blotched with brown, or sometimes with dull red; the lip is wholly yellow, slightly spotted at the base, and much waved. In the typical form the lip is rather more than half as long as the sepals. The flowers are deliciously fragrant, and last in full beauty for two or three weeks; they are produced in summer. It is a native of Surinam, whence it was introduced by Mr. J. H. Lance, in 1843.

Fig. 17; Botanical Magazine, t. 3577.

Var. *macrostachya*.—A very large-flowered form, the sepals nearly 5in. in length.

Var. *pumila*.—In this the sepals are pale yellow, without spots or markings, and the petals of the same colour, but tinged with purple near the base.

B. Lawrenceana.—This, though often confounded with B. Lanceana, is, nevertheless, quite distinct. The flowers are large and sweet-scented; the sepals and petals bright yellow, spotted with cinnamon-brown and green; the lip also yellow, tinged with green. It blooms toward the end of summer, and lasts for a long time in full beauty. Native of Brazil; introduced in 1839.

Botanical Register, xxvii., t. 18.

Var. *longissima*.—This produces a many-flowered scape, nearly 2ft. in length. The sepals are deep orange-yellow, blotched and spotted with reddish purple, and as much as

7in. in length. The lip is about 3in. in length, pale yellow, dotted and spotted towards the base with purple. It is a magnificent variety, and blooms during August and September. It was introduced from Costa Rica.

Botanical Magazine, t. 5748.

B. maculata.—One of the earliest exotic Orchids that flowered in Britain, having been introduced in 1806, and figured in the "Botanical Magazine" for 1814, from a plant which flowered at Kew. The sepals and petals are pale yellow, irregularly spotted with brown, the former being short compared with those of other species; the lip is large and spoon-shaped, white, spotted about the centre with brown and purple. Its flowers, which are somewhat showy, are produced during spring and early summer. It is a native of Jamaica.

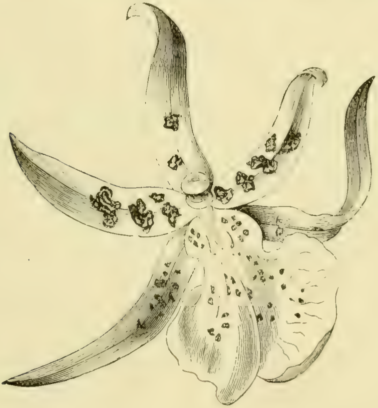


Fig. 18. Flower of Brassia maculata
(nat. size).

Fig. 18; Botanical Magazine, t. 1691.

Var. *guttata*.—This is in cultivation under the name of *B. Wrayæ*. It has greenish flowers, spotted with purplish brown throughout. The blossoms vary a good deal in size in different examples. Native of Guatemala.

Botanical Magazine, t. 4003.

B. verrucosa.—A robust plant, with large, deep green foliage; the scape is many-flowered, the blossoms being large, with greenish-white sepals and petals, which are blotched with blackish purple. The lip is white, ornamented with numerous little green protuberances or warts, from which the species takes its name. It is a showy plant, and an abundant bloomer, the flowers appearing in May and June. Introduced from Guatemala in 1838.

Bateman's Orchids of Mexico and Guatemala, t. 22.

The best variety is that known as *grandiflora*, the flowers of which are larger than in the type.

CHAPTER XVI.

BULBOPHYLLUM.

COMPARATIVELY few of the 150 described species of this genus find favour with Orchid-growers. Those here described are in cultivation and are either pretty or deserving of notice on account of the singular structure of their flowers. The rhizome is stout and creeping, and usually the pseudo-bulbs are small and roundish, bearing one or two stiff, leathery leaves on the top. The flowers are chiefly remarkable in the lip, which is jointed and movable, a very slight touch being sufficient to produce an oscillatory motion. In some instances, a dense tuft of hairs occurs at the point of the lip, and here the movement is started by the slightest breath of air. The genus is also interesting as containing, on the one hand, one of the most gigantic of Orchids—B. Beccarii—and, on the other, one of the most minute—B. pygmæum, a native of New Zealand.

Culture.—The species enumerated below are all natives of the tropics, and require a warm, moist atmosphere when growing; even when at rest it is not advisable to allow them to become quite dry. They thrive on blocks of wood, or, better still, on soft fern-stem, with a little sphagnum about the roots, and are found to succeed best when suspended near the glass.

B. barbigerum.—An interesting little plant, with pseudo-bulbs less than 1in. in diameter, bearing one oblong, fleshy leaf. The flower-spike springs from the base of the pseudo-bulb, and carries eight to twelve flowers. The sepals are pointed, and of a chocolate-brown colour; the petals small and inconspicuous; and the lip, which is long and narrow, is of a yellowish tint, terminating in a brush of dark purple, silk-like hairs. The lip is set in a rocking motion by the least current of air. Introduced from Sierra Leone in 1836.

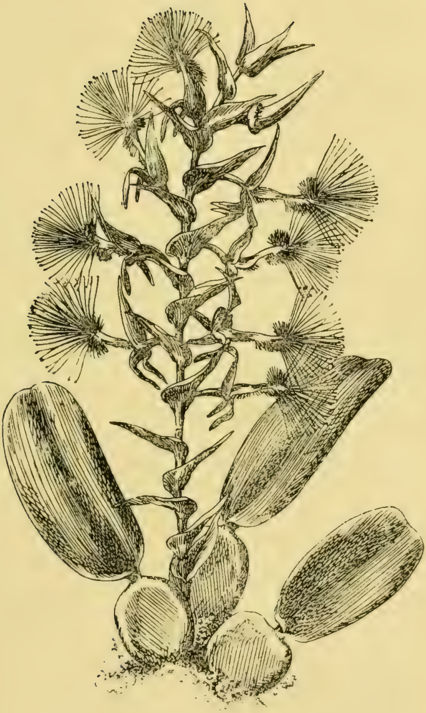
Plate; Botanical Magazine, t. 5288.

B. Beccarii.—This is one of the most extraordinary members, not only of the Orchid family, but of the whole Vegetable Kingdom. Its flowers have the reputation of giving off the vilest odour of any known plant. It is a gigantic Orchid, with rhizomes big enough to encircle the large trees on which it grows—resembling, it is said, the coils of a serpent. The leaf is the largest of any of the Orchidaceæ, measuring 2ft. in length by 1½ft. in breadth; it is also very thick and leathery. The flowers are produced in dense, pendulous racemes, measure ⅓in. in diameter, and are, in the main, yellow. When this plant was first flowered at Kew, a few years ago, the stench from the flowers was so powerful as to render the Orchid-house unbearable, and a lady who attempted to make a drawing of it fainted because of the smell. Originally found by Thomas Lobb in Borneo, in 1853, and again by Doctor Beccari, in 1867.

Botanical Magazine, t. 6567.

B. calamarium.—A pretty little plant, with short, dark green, leathery leaves, roundish pseudo-bulbs, and a slender scape 1ft. to 1½ft. high, bearing a spike of yellow and purple flowers 4in. long; the lip deeply and elegantly fringed. A native of Sierra Leone; introduced in 1843.

Botanical Magazine, t. 4088.



BULBOPHYLLUM BARBIGERUM

(nat. size).

B. Dearei.—This is probably the handsomest of the genus, having large, showy flowers, 3in. in width. The pseudo-bulbs are clustered, about 1in. in diameter, and bear a solitary, oval leaf, 4in. to 6in. long. The prevailing colour of the flower is a tawny yellow, with darker reticulating veins, and spotted with purple. The triangular lip is jointed and flexible, and is rendered conspicuous by a horseshoe-shaped crest. The history of this Orchid is not published, but it is assumed to have been introduced from the Philippine Islands.

B. lemniscatum.—One of the most singularly beautiful of small-flowered Orchids. It has small, warty pseudo-bulbs, and erect, slender scapes, bearing at the apex a recurved spike of purple flowers of very curious structure. Each of the sepals bears a relatively long, club-shaped appendage, attached by a hair-like point, so that it moves very easily. Under a magnifying lens these flowers are exceedingly interesting. This species was introduced from Moulmein in 1870.

Botanical Magazine, t. 5961.

B. Lobbii.—A desirable species, somewhat resembling B. Dearii. It has flowers 3in. to 4in. in diameter, produced singly, on slender stalks, 4in. long, from the base of the one-leaved pseudo-bulbs. The leaf is oblong, and about 6in. in length. The spreading sepals and petals are of a deep, tawny yellow, the upper sepal being spotted at the back with purple; the lip is reflexed, and, like the broad, short column, is yellow, spotted with purple. It flowers in June. A native of Java, Moulmein, &c.; introduced in 1846. Syns. *Sarcopodium Henshalli*, *S. Lobbii.*

Botanical Magazine, t. 4532.

Var. *siamense* has leaves longer and more leathery than the type, and its lemon-coloured flowers are marked with veins and spots of reddish crimson.

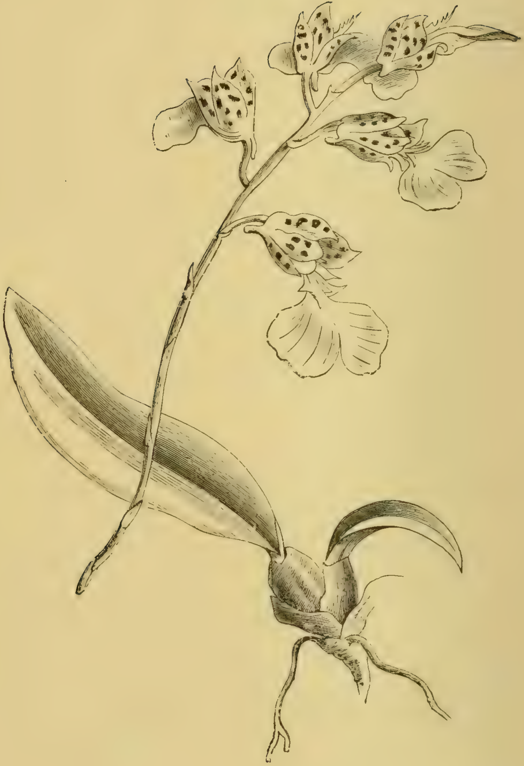
CHAPTER XVII.

BURLINGTONIA.

A SMALL genus of epiphytal Orchids, for the most part natives of the warmer parts of Brazil. The species are few in number, and only one or two are good garden plants. The pseudo-bulbs are small, flattened, and usually two-leaved; leaves sheathing at the base, stiff and leathery in texture, not more than 6in. long. Flower-scape from the base of the pseudo-bulb, bearing numerous flowers, which have short sepals and petals, arranged in a more or less tubular manner. The lip is large and spreading, with a short, horn-like spur at the base.

Culture.—All may be grown upon small blocks of wood, or in small teak baskets suspended from the roof of the stove, and liberally watered whilst making new growth. In winter they require less water, but the plants must not be allowed to get quite dry. When fastening them to blocks of wood, use a little sphagnum moss, but sparingly, for we have found that the plants thrive best when their thin, white roots can grow out, and hang free in the air. When basketing them, we prefer first to fasten them securely upon small pieces of teak, then to fill the basket with crocks, and cover the whole thinly with a layer of living sphagnum.

Burlingtonias are not difficult to cultivate; their greatest



BURLINGTONIA DECORA

($\frac{2}{3}$ nat. size).

enemy is a small white scale, which secretes itself in the sheathing bases of the leaves.

B. candida.—This—the type of the genus—is a compact plant, well suited for basket-culture. The leaves are firm in texture, and dark green. The gracefully drooping racemes are produced from the axils of the leaves; they bear four to six very handsome flowers, which are snowy white, with a slight stain of yellow on the upper part of the lip, "in substance and appearance like white satin trimmed with gold." It blooms during the months of April and May, lasting about three weeks in perfection. The flowers are very fragrant. It is a native of Demerara. Introduced in 1834.

Botanical Register, xxiii., t. 1927.

B. decora.—This has a long, slender, rooting rhizome, bearing small, oval pseudo-bulbs, each having a single leaf. A lesser leaf appears at the base of a bulb, and from the axil of this the scape springs. The flower-stems are erect, bearing from five to ten blossoms, which are white or pale rose-coloured, spotted with red, saving the large, spreading lip, which is pure white. The straggling rhizomes must be tied into position, so as to bring the roots from the base of the pseudo-bulbs under the influence of the basket or block. It blooms during May and June, lasting for a long time in full beauty. It is a native of St. Paul's, Brazil, whence it was introduced in 1852.

Plate; Botanical Magazine, t. 4834.

Var. *picta* has deeper-coloured flowers, and blooms in the autumn.

Botanical Magazine, t. 5419.

B. fragrans. — This beautiful plant is a favourite on account of the hawthorn-like fragrance of its flowers. It forms a compact tuft, with rigid, dark green leaves, and erect racemes of large flowers; the latter are pure white, saving the middle of the lip, which is stained with yellow. It blooms during April and May, lasting in perfection about three weeks. It is a native of Brazil, where it grows on the highest branches of the cedrela-trees, and fills the forest with its fragrance. Introduced in 1850.

B. venusta.—This forms a compact mass of stems and dark green foliage; the flowers are white, lightly tinted with pink, the lip being stained with yellow; they are produced in heavy, pendulous clusters. It blossoms at various periods of the year, and is a native of Brazil.

Lindley's Sertum Orchidaceum, t. 12.

CHAPTER XVIII.

CALANTHE.

NUMEROUS very handsome kinds of this genus are in cultivation. Most of them are robust-growing, terrestrial plants, producing large, broad, many-ribbed or plaited leaves, which are evergreen or deciduous; the racemes are long, bearing many flowers, and these are distinguished by their spurred lip, which is attached to the column, and by the eight thick, waxy pollen-masses adhering to a separate gland. About forty species are known, chiefly natives of Asia, a few being American.

Calanthes deserve to be special favourites with amateurs, because, in the first place, they produce an abundance of showy flowers, which last a long time in full beauty; and secondly, they are, as a rule, so easily managed that anyone possessing a warm greenhouse may grow them successfully, and may be sure of an abundance of bloom when the flowering season comes round.

Culture.—These plants thrive in a mixture of turfy loam, leaf-mould, and sphagnum, to which may be added some silver sand and dried cow-manure. During the growing season they enjoy an abundant supply of water, and even in winter water must be freely administered to the evergreen kinds, the drainage being carefully attended to;

the deciduous kinds require a thorough rest after they have flowered.

Cultural information on C. vestita and others of the deciduous section will be found under the description of C. vestita.

C. Masuca. — This is a bold-growing, evergreen plant, with large, many-ribbed, dark green leaves, and stout, erect flower-spikes, 2ft. or more high. The flowers are spreading, 1in. across, the segments overlapping; they are very numerous, with deep violet sepals and petals, which change into lilac with age, whilst the lip is intense violet-purple. This species commences to bloom during early summer, and continues until autumn; it is almost always to be found with a few spikes of flowers upon it. Native of Northern India, whence it was introduced about 1842.

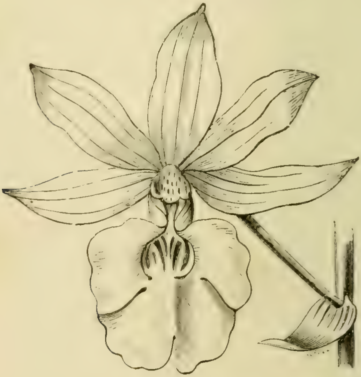


Fig. 19. Flower of Calanthe Veitchii
(nat. size).

Botanical Magazine, t. 4541.

Var. *grandiflora* differs from the species in its greater size, both of spike and individual flower.

C. Veitchii.—This is a garden hybrid, being the result of a cross between C. vestita and a near relative—Limatodes rosea; it surpasses both its parents in beauty, and is one of the most useful and beautiful of all Orchids. The pseudobulbs are flask-shaped, with a constriction in the middle, producing large, plaited, light green leaves, which are deciduous. The spike, in many instances, attains a height of 3ft., and bears an immense quantity of flowers, which are similar in shape to those of C. vestita, but shorter in the lip; they are rich bright rose, saving the throat, which is white. It blooms in the winter months, and is invaluable as a source of cut flowers.

Fig. 19; Botanical Magazine, t. 5375.

Var. *bella* has bright pink flowers.

Var. *Sandhurstiana* has deep crimson flowers.

Var. *Sedeni* has deep rose-coloured flowers, darker than in the type.

For *culture*, see under C. vestita.

C. veratrifolia.—In general appearance this plant resembles C. Masuca, producing bold, dark green, evergreen leaves, 2ft. long, and erect, many-flowered spikes, which in strong plants attain a length of 3ft. The individual flowers are not large, but they are very numerous, crowding the upper part of the scape; they are pure white. They are developed in spring and early summer, and if not wetted, last long in beauty. Although an old introduction, this species is still frequently shown among exhibition collections of Orchids. It is a native of India, Australia, &c.

Fig. 13; Botanical Magazine, t. 2615.

C. vestita.—One of the most popular of all Orchids, and one of the oldest favourites. It is grown in every garden where stove plants are cultivated, and is frequently the only Orchid represented. It was introduced in 1848, by Messrs. Veitch & Sons, since which time it has been considerably improved by cultivation and selection, and also by cross-breeding. The type has apple-shaped pseudobulbs; large, plaited, bright green leaves; and a basal flower-spike, from 1ft. to 3ft. long, sometimes branching. Each flower is about 2in. across; sepals and petals similar, spreading; lip large, divided into four lobes, pure white,

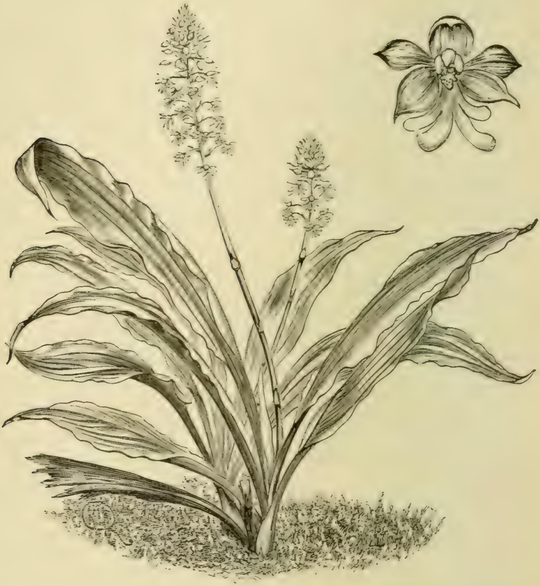


Fig. 20. Calanthe veratrifolia, showing Habit and detached Flower
(Habit, much reduced; Flower, nat. size).

with a yellow blotch in the throat. Flowering time, early winter. Native of Moulmein.

Botanical Magazine, t. 4671.

There are numerous named varieties of C. vestita, the best of which are:

Var. *gigantea.*—Larger in all its parts; spike very stout; flowers large, white, with a blood-red eye. This retains its foliage till new growth begins, and flowers from November to March.

Fig. 21.

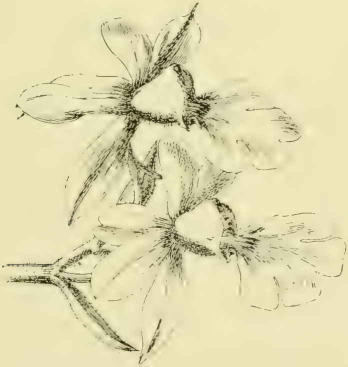


Fig. 21. Flowers of Calanthe vestita gigantea
(⅔ nat. size).

Var. *nivalis.*—Flowers pure white.

Var. *porphyrea.*—Flowers wholly blood-crimson, with a deeper-coloured eye.

Var. *Regnieri.*—Spike compact; flowers tinged all over with rose, differing slightly in form from the type.

Var. *rubro-oculata.*—Flowers large, with a crimson blotch, instead of yellow, in the throat.

Var. *Turneri.*—Flowers more compact on the spike, smaller than in the type; throat blotched with rose-red.

Soon after the flowers are over the new growth begins to push from the base of the pseudo-bulbs. In February or March the bulbs should be re-potted, either singly or three to six together. The best results are got from plants grown singly and potted on. Three bulbs are sufficient for a 6in. pot. Turfy loam, with one-sixth rotted cow-manure and a sprinkling of sand and sphagnum, forms a good mixture, and the pots should be one-quarter filled with drainage. Plant the bulbs on the top of the soil, so that the new growth is not buried; do not press the soil too firmly, and leave about ½in. of space for water. Give no water till the new roots have penetrated into the soil, and then water carefully until the new growth is well away, when a liberal supply at the root, on the leaves, and in the atmosphere, is necessary. The best position for them all through the summer is close to the glass, on the lightest side of a moist stove. When the new bulbs are approaching full size, weak liquid manure may be given weekly. Do not dry the plants off till after the flowers are over. By careful management the foliage may be got to remain on the plants till they flower. When in bloom, a dry, warm greenhouse is most favourable to the duration of the flowers. If started in small pots, the plants must be removed into larger pots as the soil fills with roots. The size and strength of the inflorescence is regulated by that of the pseudo-bulbs. These plants may be multiplied by cutting the pseudo-bulbs through transversely, and placing them on sandy soil, in a moist hothouse or frame, till rooted.

The flowers are amongst the most useful for cutting for decorative work of all kinds. In the neighbourhood of London, the flowers of this and other allied Calanthes are much damaged by foggy weather.

CHAPTER XIX.

CATASETUM.

ALTHOUGH, with one or two exceptions, the flowers of this genus are not beautiful, yet their quaint appearance and remarkable structure, together with the power they have of ejecting the pollen-masses when either of the horns attached to the column is touched, render them objects of greater interest to many than even their most showy allies. The genus deserves much more attention from Orchid-cultivators than it has hitherto received. The pseudo-bulbs are, in most instances, short and stem-like, bearing four or five plaited leaves, with stout, membranous veins. The flowers are borne on erect or drooping racemes, and are usually green, yellow, and brown, with sepals and petals of a firm, leathery texture. Occasionally flowers of different sexes are produced on the same pseudo-bulb.

Culture.—The culture of Catasetums is in nowise difficult, the essential points to be observed being abundance of heat and moisture during active growth, and afterwards a well-marked period of rest. They succeed in either pots or baskets, in a compost of fibry peat and loam, with an addition of chopped sphagnum and silver sand. Water must not be given until growth has fairly commenced, and at all times it must be prevented from lodging in the centres of the growths. Catasetums require a greater amount of light than most Orchids, and are well suited if grown along with tropical Dendrobiums. When the leaves begin to drop off, the plants should be removed to an airy position in an intermediate temperature, only sufficient water being then given to prevent the shrivelling of the pseudo-bulbs.

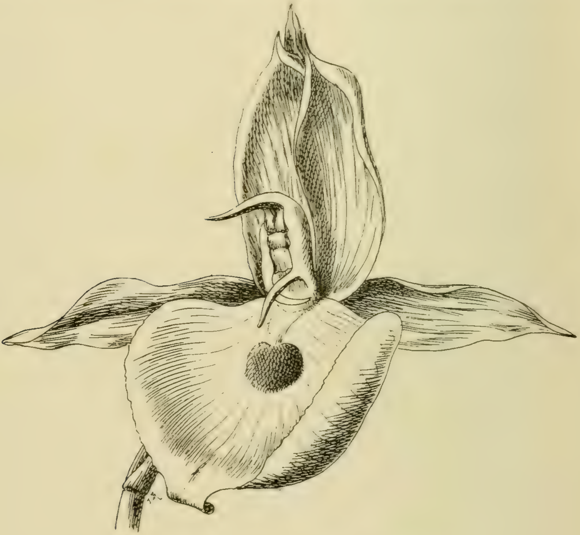


Fig. 22. Flower of Catasetum Bungerothii
(⅔ nat. size).

C. Bungerothii.—This species is by far the finest as yet introduced, one of the first plants sold in this country realising fifty guineas: it may now, however, be bought for half as many shillings. The pseudo-bulbs are 8in. to 12in. high, and taper towards the top; the leaves are of a greyish tint, and have several prominent, parallel nerves or ribs. The flowers are greenish or cream-white at first, finally becoming a beautiful ivory-white; they measure 4in. across. The sepals are lance-shaped, and pointed, the upper one, with the two petals, forming a kind of hood above the column. The lip is broad, and spoon-shaped, with a depression or pit in the centre, and in most cases finely serrated at the edge. A native of tropical America; introduced in 1885.

Fig. 22; Botanical Magazine, t. 6998.

C. Christyanum.—A curious species, with stout, tapering pseudo-bulbs, and long, plaited leaves. The flower-spike is erect, bearing six to twelve flowers, which are developed during September and October. The sepals and petals are of a dull chocolate-brown, and the lip is bright green, shaded with purple. Native of Brazil.

Williams' Orchid Album, t. 83.

C. longifolium.—This is a most remarkable Orchid, found growing on the top of a species of palm in Demerara. The pseudo-bulbs are stout and grey, and they have the curious habit of growing downwards. The leaves are narrow and glaucous, attaining a length of from 1ft. to 4ft. The flowers are densely produced on pendent spikes, having sepals and petals of a dull red colour, and a helmet-shaped lip of brownish lake, thickly dotted with yellow; they are about 1½in. in diameter. This species was discovered by Sir R. Schomburgk, in 1836, and flowered first in this country three years later. When growing it requires very hot and moist treatment. Syn. *Monacanthus longifolius.*

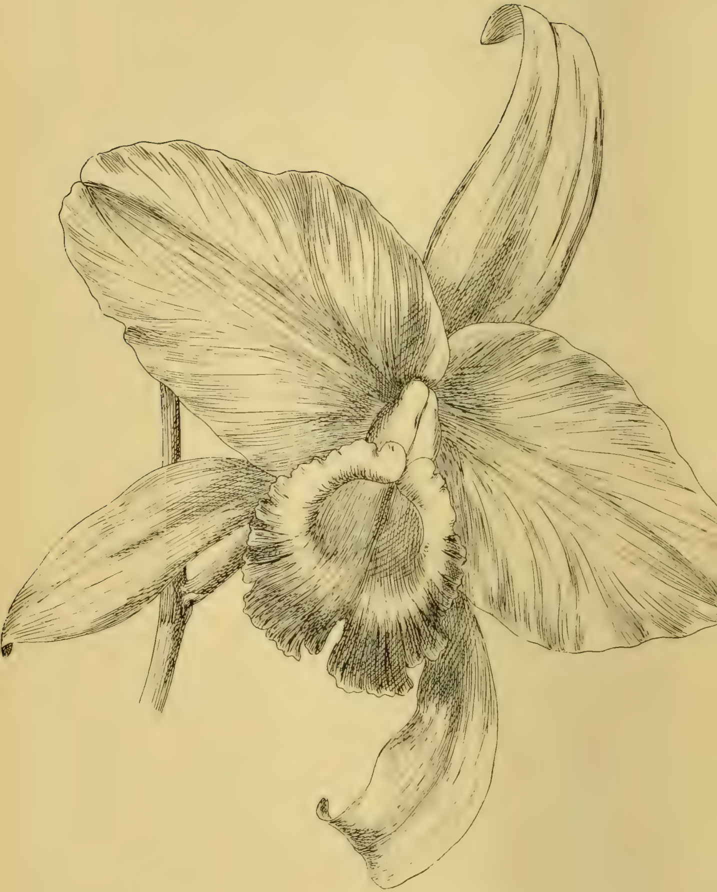
C. macrocarpum.—One of the most easily-grown, and, at the same time, one of the most striking of Catasetums. The pseudo-bulbs are 1ft. in length, and the flowers 3in. to 4in. in diameter. The broad, stiff sepals and petals have a ground-colour of pale yellowish green, marked with numerous spots of purplish brown. The helmet-shaped, very fleshy lip is of a deep orange-yellow, spotted with brown. Several varieties of this plant are in cultivation. Syns. *C. Claveringii*, *C. tridentatum* (Botanical Magazine, t. 3329).

Botanical Magazine, t. 2259.

C. saccatum.—A large-flowered and interesting species, remarkable for its sac-shaped lip. In the form of its pseudo-bulbs and foliage it resembles C. macrocarpum. The flower-scape is stout, curved, and bears several flowers; the sepals and petals are green, spotted with purple; the lip is bright yellow, with crimson spots, having a small hole in the centre leading into the chamber or sac beneath. The plant flowers in March, and is a native of Demerara, whence it was introduced in 1840.

C. scurra.—A more compact species than any of the preceding, with pseudo-bulbs about 1½in. high, and bright green leaves, 6in. long. The flowers are delightfully scented, and are of a yellowish white, with green veins. The curiously-shaped lip is three-lobed, the side lobes standing erect on each side of the column; the middle lobe consists of a short, broad stalk, developing into two lateral horns, with toothed edges. Introduced from Demerara in 1872.

Gardeners' Chronicle (n. s.), vii., p. 304.



FLOWER OF CATTLEYA LUDDEMANNIANA

($\frac{2}{3}$ nat. size).

CHAPTER XX.

CATTLEYA.

THIS magnificent genus was founded by Dr. Lindley, in 1824, upon Cattleya labiata, and was named by him in honour of Mr. William Cattley, of Barnet, who was a celebrated horticulturist, and who had the finest collection of Orchids then known.

"The Cattleyas have a horticultural importance that is scarcely equalled by any other branch of the great Orchidean family. This pre-eminence is due to the surprising beauty of the flowers of nearly all the species and varieties, which are not only of large size, but are also adorned with a wonderful variety of the most delicate and pleasing tints. Especially striking is the labellum, or lip, which is remarkable for the extreme richness of colour often developed in its anterior lobe, and for the beauty of the pencillings and markings in the throat" (Veitch).

The characters by which Cattleya is distinguished are: Sepals free to the base, and nearly equal in size; petals broader than the sepals; lip large, folded at the base into a tube inclosing the column, the other portion spreading, and very variable in colour and form in different species; column long, thick, with a toothed top, covering a two-celled, globose anther-case; pollen-masses in two pairs.

The only difference between this genus and Lælia is that in the latter there are four pairs of pollen-masses—termed *pollinia*—instead of two. In all other characters the two genera are identical. The rhizome is strong and woody, creeping, and bearing at intervals the stems, or pseudo-bulbs. The leaves are apical, and usually in pairs, sometimes solitary; they are leathery in texture, and remain on the plant several years. Generally, each branch of the rhizome produces only one new pseudo-bulb annually. The flowers are developed on short, stout spikes, from the top of the pseudo-bulb, and are at first inclosed in a sheath. When in good health, each pseudo-bulb will produce a spike of flowers, which last a considerable time before fading. Many of the kinds are plentiful enough to be obtained at little cost, and they are not difficult to cultivate when once understood. In a word, Cattleyas are gorgeously beautiful, and are essentially Orchids for amateurs. The various members of this genus are natives of New Grenada, Brazil, and Central America, and are entirely confined to the Western hemisphere. They vary considerably in size; for whilst some have pseudo-bulbs only 2in. or 3in. long, others reach as many feet in height, forming, in a state of nature, huge masses several yards in diameter. In addition to true species and varieties, we have now many Cattleyas which have been produced in this country by hybridising and cross-breeding, and these, both for size of flower and the beauty of their markings, may vie with the choicest of the introduced kinds. With reference to the conditions under which Cattleyas are found growing in a state of nature, M. Van Volxem says: "Cattleyas grow generally from 5ft. to 15ft. above the ground, commencing on the forks of thick trees, whence they extend to the branches, preferring those that are more horizontal than vertical. Between and around the bulbs rich vegetable mould accumulates, in which they luxuriate. Sometimes, however, I found them growing on the small lateral asperities of bare rocks, in the full blaze of the sun ; but in this position they were of a very stunted growth, although flowering freely."

Culture.—Many of these plants will grow when attached to a block of wood with a little sphagnum moss, and suspended from the roof ; pot-culture, however, for the bulk of the kinds will be best, as they will not only in this manner produce the finest blossoms, but will require less constant attention at the hands of the cultivator. For potting material, use good fibrous peat from which all the fine soil has been well beaten ; add to this some chopped living sphagnum moss and some clean and sharp silver sand ; fill the pots at least two-thirds with drainage, and in potting let the rhizome sit upon the top of the soil, which should be elevated somewhat above the rim of the pot, in order to carry the water away quickly. If necessary to hold the plant firmly in the pot, a few stakes should be placed in along with the drainage, to which the pseudo-bulbs can be secured. Very much depends upon the amount of water given at different seasons—Cattleyas like an abundant supply of moisture during the growing season, and a nice, genial, moist atmosphere—but it should be given from the watering-can, and not from the syringe, for in the case of Cattleyas grown in pots we have frequently remarked that where regularly syringed they never either grow or flower so well. In the case of those kinds which are suspended from the roof in baskets or upon blocks of wood, there is less to fear from the syringe, so long as the water is not allowed to stand in the large, sheathing scales which envelop the young growths and flower-scapes. This, however, may easily occur with careless or indiscriminate syringing, and often proves fatal to young pseudo-bulbs. The syringe should not be depended upon entirely as a supply to those plants grown upon blocks, but during summer they should be examined once a day, and if at all dry, immersed in a tub or pan of water, which should at least be of the same temperature as the house they are growing in. After the pseudo-bulbs are formed, water must be withheld, and the plants allowed a season of rest ; but care should be taken to prevent their becoming very dry during this period, as much injury may arise from entirely withholding water for any length of time.

If a house can be set apart specially for Cattleyas, it will be found that the majority of the kinds may be accommodated in it. The temperature should range from 55deg. in winter to 70deg. in summer, although in bright, warm weather, the latter temperature is often necessarily exceeded with safety. Ventilation should be carefully attended to, as Cattleyas cannot bear a stuffy atmosphere at any time. With respect to shading, it may be said that as little as possible should be used ; only in bright sunshine should the blinds be down, and these should be of the thinnest material. Sudden changes of temperature should be avoided. To the beginner we would recommend that each plant be considered separately in respect of water and re-potting, as Cattleyas, and, indeed, all Orchids, cannot be successfully dealt with collectively.

C. Acklandiæ.—A lovely, dwarf-growing species, which should be grown upon a block of soft wood, or in a teak basket, and placed at the warm end of the Cattleya-house or stove, where it can receive full light all the day through. When growing, it should be kept constantly moist at the root. If grown in baskets, very little potting material should be used. The pseudo-bulbs are slender, and usually from

5in. to 6in. long, bearing two oval, leathery, dark green leaves, 3in. long, and usually a pair of handsome flowers. These are large for the size of the plant, and vary somewhat in colour in different examples. They are about 4in. in diameter, the sepals and petals similar, chocolate-brown, barred with irregular, transverse bands and streaks of yellow; the lip is large and spreading, varying from rich rose to almost deep purple. This charming plant produces its flowers in May, June, and July; it will sometimes mature bulbs, each bearing two flowers, at short intervals throughout the season. It is easily distinguished by the base of the lip being too narrow and too spreading to cover the column. Introduced from Brazil, in 1839.

Botanical Magazine, t. 5039.

C. amethystoglossa. — A beautiful plant, resembling C. guttata Leopoldii in habit, but it is stronger, the pseudo-bulbs attaining a height of from 2ft. to 3ft., and bearing a pair of dark green, leathery leaves upon the apex. The scape is erect and many-flowered; the sepals and petals are rosy lilac, beautifully spotted and blotched with purple; the lip is wholly of a rich, deep purple or amethyst hue, whence the specific name. It blooms during the spring months, and lasts several weeks in full beauty; the blossoms sometimes exceed 5in. in diameter. It is a native of Brazil. Syn. *C. Prinzii.*

Botanical Magazine, t. 5683.

C. bicolor.—The entire absence of the lateral lobes of the lip (which usually enfold the column in this genus) gives this species a most remarkable appearance. The stems are slender, from 2ft. to 3ft. high, jointed, two-leaved. The leaves are oblong, and 6in. in length. Peduncles bearing from three to five flowers, each of which is about 4in. across; the sepals and petals are fleshy, and of a peculiar brownish hue; the labellum is long and narrow, of a crimson-purple colour, paler towards the margin. It was introduced in 1837 from Brazil, where it grows in large tufts, at a great elevation, on the trunks of the largest trees. It blossoms from August to October. Except where a collection of distinct kinds is aimed at, this species is not often met with.

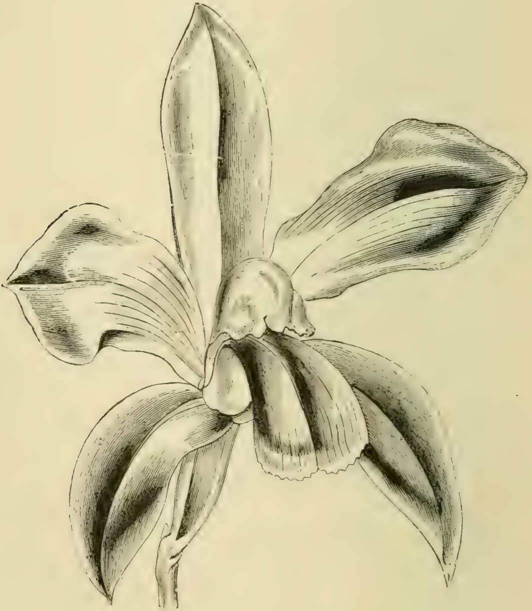


Fig. 23. Flower of Cattleya bicolor
(nat. size).

Fig. 23; Botanical Magazine, t. 4909.

C. Bowringiana.—A new introduction, with the habit of C. Skinneri, but stouter in the stem and longer in the leaf than that species. The flowers are produced from five to ten together on a scape; they are very similar to those of C. Skinneri, usually less than 3in. across, the petals as wide again as the sepals, and the lip overlapping at the sides, so as to form a funnel, slightly prolonged on the lower side. The colour is rose-purple, with veins of a deeper tint, the lip being deep purple, paler at the margin, white in the throat. This species promises to become a popular garden plant, as it grows and flowers freely under ordinary treatment, and its flowers are pretty. It requires plenty of moisture whilst growing, and should not be allowed to get dry, even when at rest. Its flowers are developed in October and November. Introduced in 1884, from British Honduras.

C. chocoënsis. — Under this name we have a winter-blooming Cattleya of much value. The flowers vary much in the depth and intensity of their markings, but all are extremely beautiful; in general habit of growth the plants resemble C. Trianæ. The flowers usually have broad, pure white sepals and petals, more or less fringed at the edges; but in some varieties these are blush, and even deep rose in colour. The lip is yellow, stained more or less profusely with rich purple. The flowers are exceptionally fragrant; they are also remarkable in remaining half-closed, as it were. This species is a native of New Grenada.

Illustration Horticole, t. 120.

C. citrina.—This fragrant and beautiful Orchid has the extraordinary habit of growing with its head downwards, and, indeed, is so obstinate in this respect that no coaxing of the cultivator has been able to induce it to hold up its head and grow upwards in the usual manner; so that, to succeed with this plant, it should always hang with the growing-point downwards. It should be grown upon a block of wood, or in shallow pans, and fastened with some copper wire, with just a small portion of sphagnum moss and peat fibre; the atmosphere should be moist, and the temperature cool. It does well if placed in a shaded corner of the Odontoglossum house. The pseudo-bulbs are almost round, and they are inclosed in silvery coats or sheaths; each bears two grey leaves. The flowers are large, growing mostly singly, but sometimes in pairs, and wholly of soft lemon-yellow, the margin of the lip wavy and white. It blooms during April and May, and owing to the great substance of the flowers, which are very fragrant, it lasts long in beauty. It is a native of Mexico, where its peculiar habit and great beauty early attracted the attention of naturalists. A Jesuit who wrote in the seventeenth century described it under the wonderful title of "Corticoatzoate coxochitl," the meaning of which is not known to us. It has been in cultivation since 1838.

Botanical Magazine, t. 3742.

C. dolosa.— An exceedingly rare plant in cultivation. It may be called a large C. Walkeriana, differing in the form of its pseudo-bulbs, the two leaves, and in the flowers springing from the leaf-growths, and not in a separate growth, a peculiarity known only in C. Walkeriana. The side lobes of the lip in C. dolosa are very broad, and overlapping; the colour of the whole flower is a soft lilac, suffused with white, the lip being broad and purple, with a white throat. Introduced from Minas Geraes, in 1872. This plant is so rare that we might have been excused for omitting it altogether. It requires ordinary Cattleya treatment.

C. Dowiana.—A magnificent Orchid, and a free flowerer when well managed. It thrives only when treated as a stove plant. With us it is grown along with the Vandas, and is suspended in baskets near the glass ; in growth it is robust, and somewhat resembles C. labiata, but even when not in bloom it is sufficiently distinct in appearance to be recognised from that species. The scape bears from two to six flowers of great size ; the sepals and petals are of a deep nankeen-yellow colour; the labellum is large and spreading, delicately frilled on the margin, and wholly of an intense, rich purple, shaded with violet-rose, and beautifully streaked with lines of gold. Its flowering season has usually been during the late summer and early autumn months. It is a native of Costa Rica, whence it was introduced some years ago, but in bad condition. On its re-introduction in 1864, it was obtained by the Messrs. Veitch, and flowered in the autumn of the following year.

Botanical Magazine, t. 5618.

Var. *aurea*.—This plant is commonly known as *C. aurea*, but it scarcely differs from C. Dowiana, except in the yellow of the lip being more copious, and irregularly distributed.

C. Eldorado.—This species is related to C. labiata. It has stout, rounded pseudo-bulbs, which support a single large, deep green leaf. The flowers are nearly as large as in C. labiata; the sepals and petals vary in colour from pink to clear rose, and are more or less serrate at the edges; the lip is large and spreading, serrate at the edge, and purplish crimson in front, whilst the throat is stained with deep orange and bordered with white. It blooms in July and August, and has been introduced from the region of the Rio Negro.

Flore des Serres, xviii., t. 1826.

Var. *crocata*.—Flowers deep rose, with a blotch of deep orange on the lip.

Var. *Wallisii*.—Flowers white, with a small blotch of orange on the lip.

C. Forbesii.—Stems slender, 1ft. high, bearing two oval leaves, and erect spikes, with from two to five flowers, each of which is 4in. across; sepals and petals similar, yellowish green; lip with a small, rounded blade, yellow, rayed and spotted with reddish purple. Native of Brazil. Introduced in 1823. It flowers in autumn. This species is not attractive enough to find favour among Orchid-growers nowadays. It requires intermediate treatment.

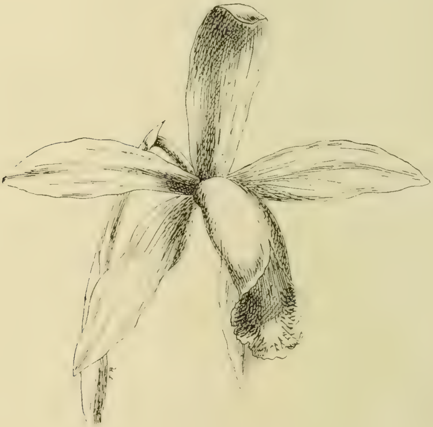


Fig. 24. Flower of Cattleya Forbesii
(½ nat. size).

Fig. 24; Botanical Magazine, t. 3265.

C. Gaskelliana. — One of the most beautiful of the labiata group, and especially valuable on account of its flowering at an unusual time, viz., July and August. Its pseudo-bulbs, leaves, and habit, are like those of C. Mossiæ. The flowers are full, and as much as 7in. across; sepals and petals pale purple, suffused with white, sometimes wholly amethyst-purple; the upper or folding parts of the labellum are the same colour as the petals, the lower, spreading part pale mauve, with a large, saddle-shaped blotch of deep yellow, or sometimes lemon-yellow. There are also two white blotches and a mottled deep purple one on the front of the lip. Some of the forms are much inferior to others, but a good one is equal to the best of the Cattleyas. It requires the same treatment as C. Mossiæ. It is a native of Venezuela, whence it was introduced in 1883.

C. gigas.—The flowers of this grand species are the largest of any Cattleya known; they measure 8in. or more across, and are delicate mauve-purple. The lip is large, spreading, and rich crimson-purple, edged with a paler shade of purple. There is a large blotch of yellow in the throat. The habit of the plant is similar to that of C. Trianæ. It should be treated as advised for C. Warneri. It blooms in July and August, sometimes in May, and is a native of New Grenada.

Vars. *imperialis*, *Sanderiana*, and *Shuttleworthii* are exceptionally fine forms, with large, richly-coloured flowers.

C. granulosa.—A slender-growing species. Pseudo-bulbs 1ft. high; leaves oblong; flowers 4in. across; sepals and petals olive-green, with rich brown spots; lip whitish, with numerous crimson, raised spots or granulations — hence the name. A dusky-flowered plant, admired by some growers. It thrives under ordinary Cattleya treatment.

Introduced from Guatemala, in 1840. Flowering season, autumn.

Botanical Register, 1842, t. 1.

Var. *Russelliana.*—Leaves and flowers larger than in the type ; lip yellow inside the folding portions, the spreading part white, spotted with crimson-purple.

C. guttata.—This species attains a height of from 1½ft. to 2½ft., and bears a pair of oblong, dark green leaves upon the apex of the pseudo-bulbs; the scape is erect, bearing from five to ten flowers, each 4in. across; the dotted sepals and petals are green, tinged with yellow and crimson; lip white and rosy purple. It flowers during autumn, and was introduced from Brazil in 1827.

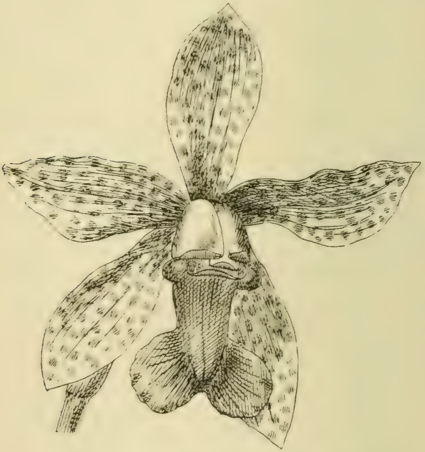


Fig. 25. Flower of Cattleya guttata Leopoldii
(½ nat. size).

Botanical Register, t. 1406.

Var. *Leopoldii* resembles the type in general habit; the flowers are produced during the summer, and differ from those of C. guttata in the colour of the sepals and petals, which is deep chocolate, with dark red spots; the lip is of a rich red-purple, white on the inner side. The fragrant blossoms are more numerous than those of C. guttata, as many as twenty being sometimes produced on each spike. It is a native of the Island of St. Catharine, Brazil, and was named in honour of the late King of the Belgians.

Fig. 25; Pescatorea, t. 43.

Var. *Russelliana.*—This beautiful variety was brought from the Organ Mountains in 1838, and is altogether a taller and larger plant, with larger and darker flowers.

Botanical Magazine, t. 3693.

C. Harrisoniana.—Although an old species, this is still worth growing, as it flowers freely, and is easily managed. The pseudo-bulbs are about 1½ft. high, bearing a pair of leaves each. The flowers are 4in. across, spreading, the sepals and petals equal, the whole being soft rose-colour, saving the base of the lip, which is stained with yellow. It usually blooms during July and August, lasting a month in full beauty. It is a native of Brazil, and has been in cultivation since 1836. Syn. *C. Harrisoniæ.*

Paxton's Magazine of Botany, iv. 247.

Var. *candida.*—Flowers white.

Var. *maculata.*—Sepals and petals dotted with purple.

Var. *violacea.*—Flowers purplish rose.

C. intermedia.—There are several forms of this charming and easily-managed species. The stems are slender, jointed, 1ft. high, two-leaved; the leaves are ovate, 6in. long. The flowers are borne on an erect scape, usually three to five flowers on each, and they are 4in. across. The sepals and petals are soft rose, shaded with purple; the lip is paler in colour, blotched in front with deep violet-purple. It blooms during May, June, and July. It is an old inhabitant of our houses, having been introduced from the neighbourhood of Rio in 1824. Syns. *C. amabilis*, *C. amethystina*.

Fig. 26; Botanical Magazine, t. 2851.

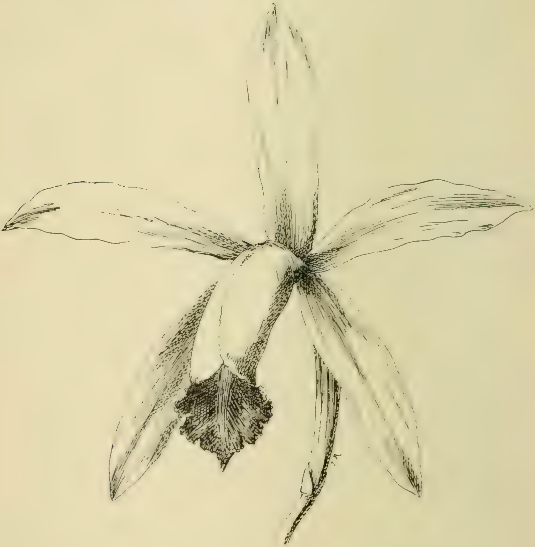


Fig. 26. Flower of Cattleya intermedia
(⅔ nat. size).

C. labiata. — This name is used by the Messrs. Veitch for a large group of distinct kinds which are reduced by them to varieties of C. labiata. To us, however, it appears much the simpler plan to treat such kinds as C. Mossiæ, C. Trianæ, C. Dowiana, &c., as species, therein following the late Professor Reichenbach. The typical plant, now known as C. labiata vera, is robust in habit, attaining a height of from 18in. to 20in., bearing a single, broad, leathery, dark green leaf, on a pseudo-bulb 5in. to 10in. long, swollen in the middle, and furrowed. The flowers are large, measuring upwards of 6in. in diameter. The sepals and petals are very broad, and of a deep rose-colour, the latter being beautifully waved; the lip is large, and somewhat folded, the front portion being of an intense deep velvety crimson, bordered with rose-lilac, and with a blotch of yellow below. The colours of this portion of the flower are gorgeous; and the substance and texture being singularly clear and translucent, the plant, when in full bloom, seems actually luminous. As we have already observed, this species was the first to flower in England, having been introduced from Brazil in 1818. It blooms always during the late autumn months, and lasts for a long time in perfection. It is extremely rare and valuable.

Botanical Magazine, t. 3998.

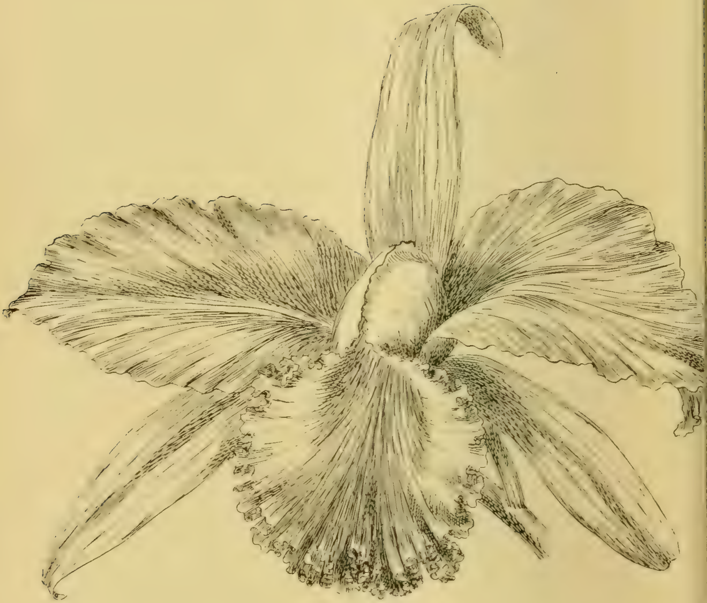
Var. *pallida* resembles the preceding in its style of growth, but is less robust; its flowers are large and handsome, but considerably paler in colour than the type.

C. Lawrenciana.—One of the handsomest and most interesting of recently-introduced kinds. It belongs to the labiata group, and suggests the characters of two well-known kinds, viz., C. Mossiæ and C. Skinneri. The pseudo-bulbs are 6in. long, one-leaved, the leaf 9in. long. Flowers 5in. across, produced in spikes of from five to seven flowers; sepals narrow, pale purple or lilac; petals as broad again as the sepals, similar in colour; lip rolled into a tube with a spreading front, which is purple, shaded with maroon, and blotched with white. This species is almost tropical in its requirements. It should be treated as advised for C. Dowiana. Flowering season, spring. It was introduced from the Roraima Mountain, in British Guiana, by Messrs. Sander & Co., in 1884, and is named in compliment to Sir Trevor Lawrence, Bart., M.P., President of the Royal Horticultural Society.

Sander's Reichenbachia, i., t. 12.

C. Loddigesii.—Similar in habit and stem to C. Harrisoniana. Flowers on erect peduncles, 4in. in diameter; sepals and petals equal, delicate rose-lilac; lip with a broad, rounded blade, crisp at the margin, coloured pale amethyst-purple, with a pale yellow blotch on the disc. It blooms in August, and remains a long time in perfection. Although a small Cattleya, this is a desirable plant for amateur collections, being easily grown, cheap, and a free bloomer. It thrives under the treatment recommended for Cattleyas generally. Introduced by Messrs. Loddiges, of Hackney, early in the present century. It is one of the commonest of Orchids in Brazil.

C. Luddemanniana.—This is another member of the labiata group, resembling C. Mossiæ in the size and shape of its pseudo-bulbs and leaves, and also somewhat in its flowers. The latter measure 8in. across, and are produced on spikes three or four together. The petals are three times as broad as the sepals, and the lip is large, folding well over at the sides. The whole flower is purplish rose, except the spreading portion of the lip, which is of a deep amethyst-purple, with two blotches of yellow or creamy white in the throat, where also there are diverging lines of bright amethyst. This species is also called *C. speciosissima Lowii* and *C. Mossiæ autumnalis*. It is a magnificent Cattleya, but is somewhat difficult to flower. The flowers appear directly after the new growth attains full size, and not after a rest as the others do. It requires an airy, light



FLOWER OF CATTLEYA MENDELII

($\frac{2}{3}$ nat. size).

position in the warm end of the Cattleya-house, and if carefully managed it should blossom in September and October. Introduced from Venezuela in 1854, and again in quantity, by Messrs. Low & Co., in 1883.

Plate; Williams' Orchid Album, vi., t. 261.

Var. *alba* has large, white flowers, the lip blotched with yellow.

Vars. *brilliantissima* and *Regina* are very deep-coloured forms.

Var. *Schrœderi* has white flowers, the lip blotched yellow and lined with purple.

C. maxima—This is a useful species, producing several of its fine flowers upon one spike in November. The blossoms are 5in. across, rose-coloured throughout, of a pale hue when they first expand, gradually becoming darker; the lip, which is very large, is almost white, beautifully ornamented with dark purplish-crimson veins, and streaked in the centre with orange-colour. The pseudo-bulbs are slender, about 1ft. long, one-leaved, the leaves from 6in. to 10in. long, and 2in. broad. It is a native of Columbia and Guayaquil, whence it was introduced in 1844.

Botanical Magazine, t. 4902.

Var. *alba.*—Flowers white, with a yellow blotch and purple markings on the lip.

Var. *aphlebia.*—Lip without purple markings.

A form with short stems and deep-coloured flowers is known as *Backhouse's* variety.

C. Mendelii.—A magnificent Cattleya of the labiata group. The pseudo-bulbs are short, stout, and furrowed, and the leaf is oblong and leathery. The flowers are very large; the sepals and petals are white, or pale satiny pink, becoming, in most varieties, almost pure white soon after opening; the folding parts of the lip are the same colour as the petals, the spreading portion being very large, the margin crisped and wavy, and the colour rich crimson-purple with a distinctly-defined blotch of yellow in the throat. This is one of the most popular of Cattleyas, and although varying a great deal, not one of its numerous varieties could be called poor. It is easily cultivated, thriving if treated as advised for the bulk of Cattleyas, and flowering annually from April to June. There are many named varieties of it, the best of which are described below. It was introduced in 1870, and large quantities of it are now imported annually from New Grenada.

Plate; Williams' Orchid Album, i., t. 3.

Var. *bella.*—Flowers pale lilac; lip rose-mauve, veined with lilac.

Var. *Bluntii.*—Flowers pure white, save a small, yellow blotch on the lip.

Var. *Leeana.*—Flowers deep-coloured, the petals blotched with amethyst-purple.

Var. *Morganæ.*—Flowers white, with a small purple blotch on the lip, which is veined with red.

Var. *Rothschildiana.*—Flowers large, pale purple, the lip brilliant amethyst, margined with pale lilac.

C. Mossiæ. — This grand old species should be represented in every collection of Orchids. The pseudo-bulbs are stout, variable in length, broadest in the middle, and furrowed, and bear a single, coriaceous, dark, shining green leaf. The scape bears from three to five flowers, measuring 6in. or 8in. in diameter; and even larger examples are on record. Although the flowers vary much, the sepals and petals are usually of some shade of blush or deep rose, the latter being sometimes as much as 3in. in breadth. The labellum is of the same colour, in most instances beautifully fringed or crimped round the edge ; it is large and spreading, the front portion being suffused with rich violet, purple-veined, bordered with lilac, and, in addition, stained with orange at the base; the folding portion is veined with purple on the inside. By this marking of the lip this species is very easily

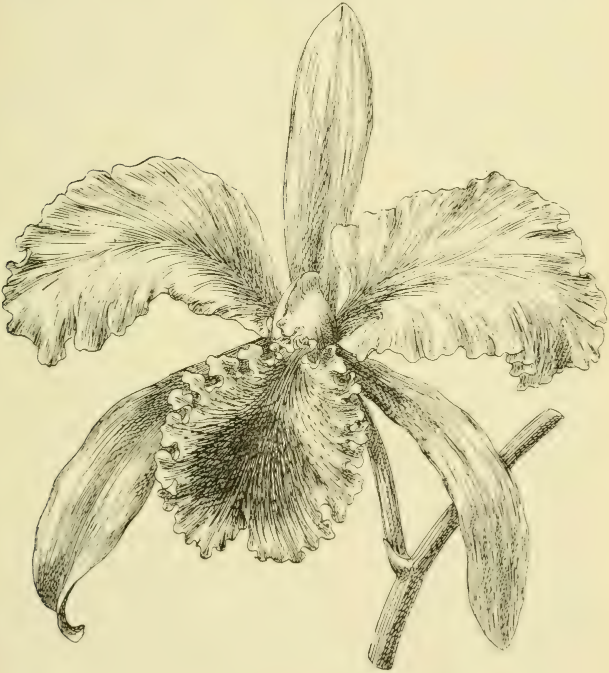


Fig. 27. Flower of Cattleya Mossiæ
(½ nat. size).

distinguished from C. labiata, of which it is by some considered a form. We have seen examples of this species with forty blooms expanded at one time, presenting a truly magnificent appearance. The flowers are produced from April to August, and will remain three or four weeks in full beauty; they are deliciously fragrant. A native of La Guayra, whence it was introduced in 1836. It was named in honour of Mrs. Moss, of Otterspool, near Liverpool, who, fifty years ago, had a famous collection of Orchids.

Fig. 27; Botanical Magazine, t. 3669.

Some of the most distinct and beautiful of the varieties are here given. Many others are in cultivation.

Var. *candida.*—Flowers white, the lip streaked with purple.

Var. *Hardyana.*—Flowers lilac-purple, with magenta blotches; lip deep purple in the centre, with radiating veins.

Var. *Reineckiana.*—Flowers white; disc and lip veined with deep purple.

Var. *Wageneriana.*—Flowers white, with a yellow blotch in the centre of the lip.

The treatment required by C. Mossiæ suits the majority of the species. It likes an intermediate temperature, shade from bright sunshine, plenty of water at the root and in the atmosphere during summer, or whenever growth is active, and just sufficient to prevent shrivelling in the winter, or whilst the plant is at rest. It should be potted in peat-fibre and a little sphagnum, and the pot should be two-thirds filled with clean crocks and a few pieces of charcoal. The soil should be pressed firmly about the roots. Re-potting ought to be done directly new roots begin to push from the young end of the rhizome. Whilst in flower the plant may be removed into a shaded greenhouse or cool living-room.

C. Percivaliana.—A distinct and beautiful Cattleya, of medium size, and not unlike a small C. Mossiæ in general characters. The colour of the flowers is, however, deeper, and the lip is exceptionally richly marked, being crimson shaded with maroon, rich yellow in the throat, and thickly veined with red and purple. The beauty of the markings on the lip cannot be easily described in words. This comparatively new kind is easily grown and flowered. It requires the same treatment as recommended for C. Mossiæ, with very little shade, even in the brightest weather. The flowers are developed in midwinter. There are several named forms of it, which differ from the type in the markings of the lip and the shade of purple in the sepals and petals. Introduced in 1882, from Venezuela.

Williams' Orchid Album, iii., t. 144.

C. Schilleriana.—This resembles C. Acklandiæ in its habit of growth, but the pseudo-bulbs are more robust, the texture of its leaves is more leathery, and they are reddish on the under side. The flowers are large, measuring between 3in. and 4in. in diameter, and are borne upon an erect scape, which is three- to five-flowered. The sepals and petals are olive-green, and more or less spotted with rosy purple. The lip is large and spreading, the ground-colour being deep amethyst, tinged with rosy purple; this is set off by a neat marginal border of white, whilst the throat is stained with yellow. It requires the same treatment as recommended for C. Acklandiæ, and flowers both in early summer and in the middle of the autumn. It is a native of Brazil, whence it was introduced in 1857, and flowered in the collection of Consul Schiller, at Hamburg. It is sometimes known by the name of *C. Regnelli.*

Botanical Magazine, t. 5150 (var. *concolor*).

C. Schofieldiana.—This is closely related to C. granulosa, resembling it in form and habit, but differing in the colour of the flowers, which are also larger. They are pale tawny yellow, spotted with purplish crimson; the lip is 2½in. long, the spreading portion granulated and magenta-purple, the folding portions being white and rose. It is the handsomest of the group of Cattleyas to which it belongs, and which are characterised by the colour of the flowers and the granulated lip. It is easily kept in health, if grown in the warm end of the Cattleya-house. It was introduced from Brazil in 1881; flowering in August of 1882.
Williams' Orchid Album, ii., t. 93.

C. Skinneri.—This is an old favourite of English Orchid-growers, and one which during the past few years has become very popular. It enjoys a little more warmth than most of the species, the warm end of the Cattleya-house suiting it. The pseudo-bulbs are from 6in. to 12in. high, and bear a pair of deep green, oval leaves, 6in. long; the scape is erect, and bears from six to twelve flowers, each about 5in. across, and coloured a beautiful rose-purple except the lip, which is white, bordered with purple; the petals are as broad again as the sepals, the column is shorter than in most of the species, and the lip is folded into a tube at the base, spreading and open at the apex. The flowers are produced during April and May, lasting several weeks in full beauty. It was introduced in 1836, from Guatemala, where it was discovered by the indefatigable Mr. Skinner (whose name it bears). It is in great request among the natives of those regions for the purpose of decorating the altars of their churches, and is known to them as the "Flower of S. Sebastian." It grows upon very high trees, and, according to its discoverer, is very difficult to get at.
Botanical Magazine, t. 4270.

Var. *alba* has pure white flowers, save a primrose-yellow blotch on the lip.

Var. *oculata* is characterised by a large blotch of maroon on the lip.

Var. *parviflora* has smaller flowers than the type, and a unicoloured lip.

Botanical Magazine, t. 4916.

C. superba.—A beautiful species, but usually difficult to cultivate. The pseudo-bulbs are slender, channelled, about 8in. long, purplish, two-leaved. Leaves 5in. long, ovate. Spikes three- to five-flowered; flowers 5in. across, bright rosy purple, suffused with white, very fragrant; lip with acutely-angled side lobes folding over the column, the

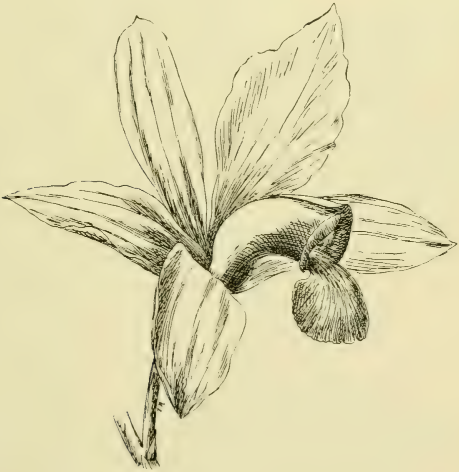


Fig. 28. Flower of Cattleya superba
(⅔ nat. size).

front lobe spreading, kidney-shaped, crimson-purple, with a blotch of yellow and white in front. This plant was very successfully cultivated by the late Mr. Spyers, who grew it as follows: The plants were fastened to a piece of soft fern-stem, and from the commencement of growth, till the flowers expanded, they were liberally watered, and suspended in the hottest stove. Whilst in flower they were placed in a cooler, airier house, which assisted the new pseudo-bulbs to ripen. After flowering, the plants were again removed to the hot-stove. When well managed this Cattleya is a most lovely Orchid. It is a native of tropical South America. Flowering season, July and August.

Fig. 28; Botanical Magazine, t. 4083.

C. Trianæ.—This is an extremely variable species. In habit it resembles C. Mossiæ, but the pseudo-bulbs are usually thinner. The scape is many-flowered; the sepals and petals are rosy lilac, varying to deep rose or white; the lip is of the same colour, stained at the base with yellow, and having the front lobe of a more or less rich purplish-violet colour. The blossoms last a long time in full beauty, if not damaged by water from the syringe. In some of the forms the flowers are as much as 8in. across. This species is a native of New Grenada, and was first flowered about 1860. Syn. *C. quadricolor.*

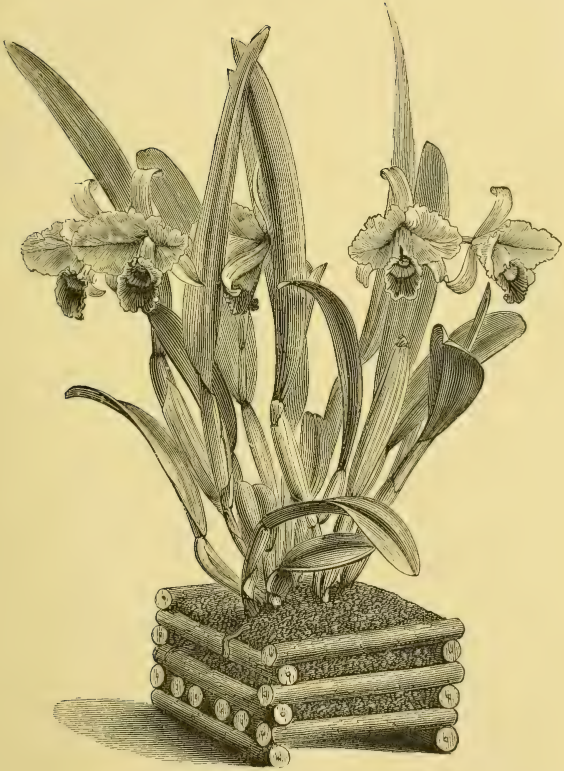
Plate; Botanical Magazine, t. 5504.

There are many named varieties, some of them being of exceptional beauty; amongst them are:

Var. *alba.*—Flowers white, save a blotch of purple on the lip.

Var. *Backhouseana.*—Flowers blush-pink; lip large, with a bright magenta stain, yellow in the throat.

Var. *Dodgsoni.*—Sepals and petals white; lip violet-crimson; throat yellow.



CATTLEYA TRIANÆ

(Much reduced).

Var. *Leeana.*—Flowers very large, rosy lilac; lip large, rich magenta, striped with orange in the throat.

Var. *Williamsii.*—Flowers blush-white, veined with magenta; lip crimson-purple.

C. Walkeriana.—An elegant little plant, with short, conical pseudo-bulbs, bearing each one leaf; the spike of two flowers is developed on a separate flowering growth, which bears no leaves, and withers after the flowers fade. Flowers 5in. across, the sepals and petals overlapping and reflexed, rose-coloured; the lip has two broad side lobes, which also are rose-coloured, the rounded, spreading blade being brilliant amethyst outside, with radiating lines of a deeper colour, while the throat is

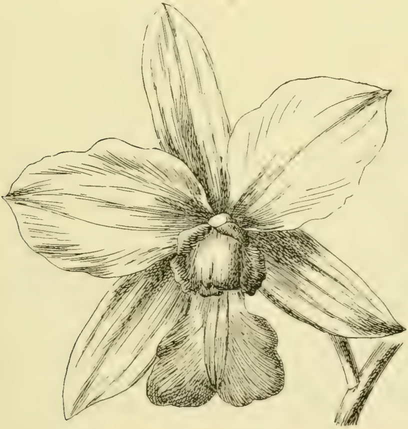


Fig. 29. Flower of Cattleya Walkeriana
(⅔ nat. size).

yellowish white. The flowers are developed in winter, and last in perfection about six weeks. This plant thrives best when grown in shallow teak baskets, or fastened to a piece of soft fern-stem. It likes plenty of light, shading only in very bright weather, and abundance of moisture always. It is rather a shy flowerer. Introduced from Brazil in 1839. Syn. *C. bulbosa.*

Fig. 29; Botanical Register, 1847, t. 42.

Var. *nobilior.*—Flowers larger than in the type; side lobes of lip broader.

Var. *Schrœderiana.*—Stems not thicker than a goose-quill; flowers of a bright rose-purple; side lobes of lip small.

C. Warneri. — This is one of the most beautiful of all Cattleyas, much resembling C. labiata in habit, and doubtless nearly related to it. The scape is many-flowered, each bloom measuring upwards of 6in. across; the sepals and petals are broad, and of a deep rose-colour; the large labellum has its middle lobe much expanded, deep rich crimson in colour, ornamented in front with an elegant marginal fringe, which adds considerably to its beauty. It blooms during the summer months, and continues long in perfection. The cultivation of this species is not easy. Newly-imported plants often fail to establish themselves, and well-established specimens do not always flower. It should be grown in the warm end of the Cattleya-house when established. Newly-imported plants should be fastened on to blocks of wood, and be kept in a moist stove atmosphere till they commence to make new roots. They should then be potted in peat fibre, and be removed to the Cattleya-house to make their growth. C. Warneri was introduced from South Brazil about 1859.

Warner's Select Orchids, t. 8.

Supposed Natural Hybrids.

The following kinds have been described as hybrids which have originated by the crossing of species in a wild state. They are so rare that for our purpose it is not necessary to give more than the parentage, with a very brief description of each.

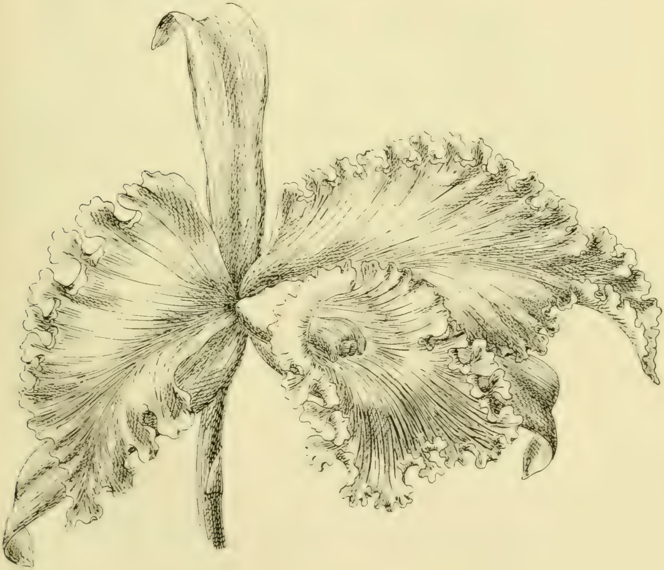


Fig. 30. Flower of Cattleya exoniensis
($\frac{2}{3}$ nat. size).

C. Brymeriana (from C. superba and C. Eldorado).—Sepals and petals rose-purple and white; lip deep purple in front, mauve-purple and yellow at the sides.

C. exoniensis.—Often called *Lælia exoniensis.* This is a plant of English origin, and is a supposed cross between C. Mossiæ and Lælia purpurata. In habit it much resembles the latter, whilst the flowers partake of the beauty of both. The sepals and petals are white, tinged with rosy lilac; whilst the labellum, which is very large, is of an intense, rich, shining purple, with a white, marginal border, the throat being suffused with rich golden yellow. It blossoms during late summer and autumn, and lasts many weeks in perfection.

Fig. 30; Floral Magazine, t. 269.

C. Hardyana (from C. Dowiana and C. gigas).—One of the grandest of Cattleyas. Flowers very large, rose-purple; lip magenta-purple, veined with golden yellow.

C. velutina (from C. bicolor and C. guttata).—Flowers tawny yellow, spotted with purple; lip white and yellow, streaked with purple.

C. Whitei (supposed to be from C. labiata and C. Schilleriana).—Flowers olive-green and rose; lip magenta-purple, with veins of deep purple.

Garden Hybrids.

The following is a list of the hybrid Cattleyas which have been raised in English gardens, chiefly by the Messrs. Veitch, of Chelsea. These plants are most of them represented by only one or two specimens, and as they cannot be propagated except by division—a very slow process in the case of Cattleyas—they are out of the reach of most amateurs. When it is remembered that from the time of sowing the seeds to the time when the plants thus obtained develop flowers is seldom less than twelve years, and that even then only *one* plant may be worth saving, the high value set on good hybrid Cattleyas is easily understood.

NAMES OF HYBRIDS.	RAISED FROM
C. *Brabantiæ* . . .	C. Loddigesii and C. Acklandiæ.
C. *calummata* . . .	C. intermedia and C. Acklandiæ.
C. *Chamberlainiana* .	C. Leopoldii and C. Dowiana.
C. *Dominiana* . . .	C. maxima and C. intermedia.
C. *fausta*	C. Loddigesii and Lælia exonensis.
C. *Harrisii*	C. Leopoldii and C. Mendelii.
C. *hybrida picta* . .	C. guttata and C. intermedia.
C. *Manglesii* . . .	C. Luddemanniana and C. Loddigesii.
C. *Mardelli* . . .	C. Luddemanniana and Lælia elegans.
C. *Marstersoniæ* . .	C. labiata vera and C. Loddigesii.
C. *Mitchelli* . . .	C. Leopoldii and C. Trianæ var.
C. *porphyrophlebia* .	C. intermedia and C. superba.
C. *suavior*	C. intermedia and C. Mendelii.

CHAPTER XXI.

CHYSIS.

THE several cultivated species of this genus are remarkable for their large, fleshy flowers, and one of them—viz., C. bractescens—is handsome enough to rank among the most select of Orchids. All the kinds have large, fleshy pseudo-bulbs, about 1ft. long, thin at the base, and greyish green. The leaves are lance-shaped, and have prominent nerves; when the growth ripens, the leaves wither and fall off. The flowers are in short racemes, and are developed along with the new growth; the sepals and petals are fleshy, broad and spreading, and the lip is large, with prominent side lobes and a recurved middle lobe. The introduced kinds are natives of Mexico or Colombia.

Culture.—Teak baskets, pans, or pots, may be used for these plants; they like plenty of root-room, good drainage, and a mixture of peat-fibre and sphagnum. When growing, they must have tropical treatment, with plenty of water at the roots. When growth is finished, they should be removed to an intermediate house, and be kept rather dry till they begin to grow again. They should be re-potted as soon as new growth shows itself.

C. aurea.—This has rounded pseudo-bulbs, about 9in. long, and broad, lance-shaped leaves; the flowers are tawny yellow, somewhat cup-shaped, and the tips of the segments are marked with crimson on the inside. It usually flowers twice a year, and remains in blossom about a month. Native of Venezuela; introduced in 1834.

Botanical Magazine, t. 3617.

C. bractescens.—A larger plant than C. aurea, the pseudobulbs being thicker, and the leaves broader. The flowers are developed about six together on a semi-drooping raceme, each one being nearly 3in. across; the sepals and petals are spreading, overlapping, and pure white; the lip is white, blotched inside with yellow, and marked with crimson lines and fleshy, teeth-like projections; the flowers appear in April or May, each lasting about a fortnight. Native of Mexico; introduced in 1840.

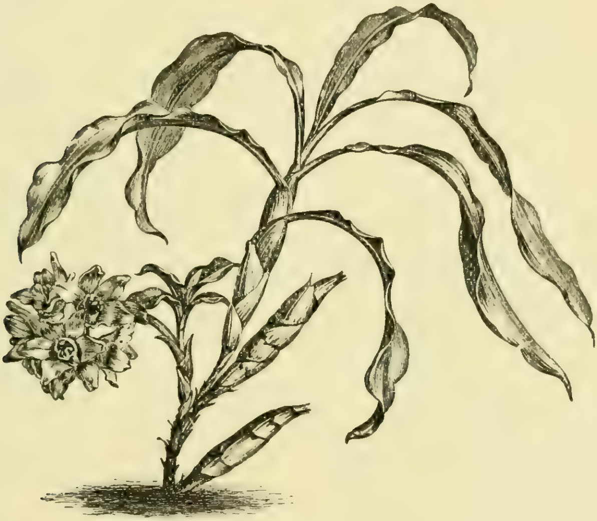


Fig. 31. Chysis bractescens
(much reduced).

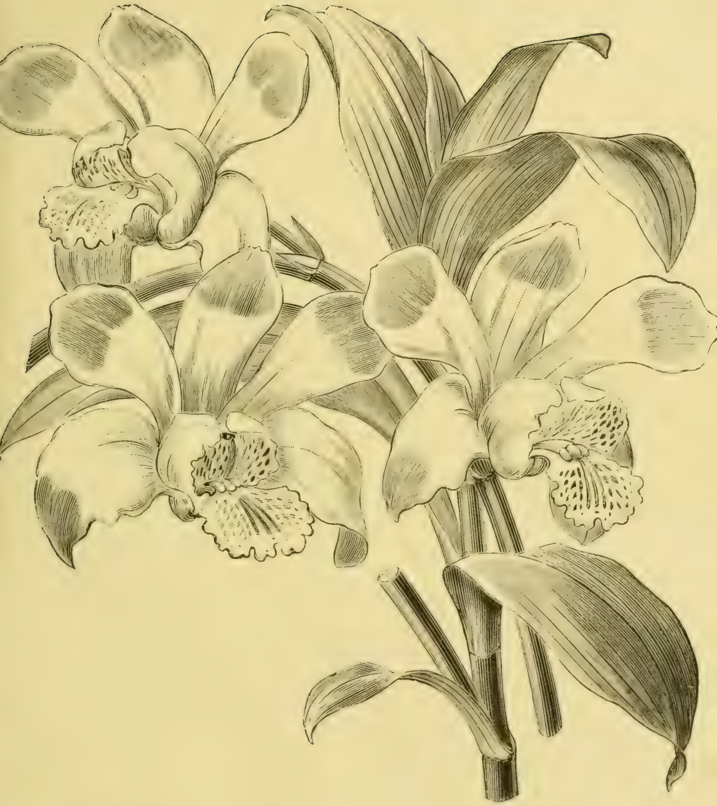
Fig. 31; Botanical Magazine, t. 5186.

C. chelsoni is a hybrid, raised from C. Limminghei and C. lævis. It has rather narrow pseudo-bulbs, bearing recurved, green leaves on the upper part ; the raceme is 6in. long, arched, and bears five or six flowers, which have the sepals and petals yellow, blotched with purple on the upper half, and a whitish lip, blotched with deep purple; the column also is white, with purple dots. Raised by Messrs. Veitch and Sons, to whom we are indebted for the illustration.

Plate.

C. Limminghei.—This has pseudo-bulbs 1ft. long, broad, lance-shaped leaves, and arched racemes of large flowers, which are white, with purple-rose tips; the lip is yellow, striped with rose inside, the front being wholly purple-rose, with blotches and stripes of a deeper colour. It flowers freely in May and June. It is a native of Central America.

Botanical Magazine, t. 5265.



LEAVES AND FLOWERS OF CHYSIS CHELSONI

(nat. size).

CHAPTER XXII.

CIRRHOPETALUM.

In this genus there are several beautiful little plants, whilst all of them are remarkable in the structure of their flowers. They are nearly allied to Bulbophyllum, from which they are distinguished by having their lateral sepals very much lengthened out. It is this singular elongation which gives them their distinctive appearance and peculiar charm. Between forty and fifty species are known, nearly all of them being natives of tropical Asia. They are epiphytes, with roundish pseudo-bulbs springing from a creeping rhizome, and from each of which proceeds a single fleshy leaf. The scapes are erect and thin, and grow from the sides of the last-ripened pseudo-bulbs; the flowers are all arranged in a compact head or umbel on the top of the scape.

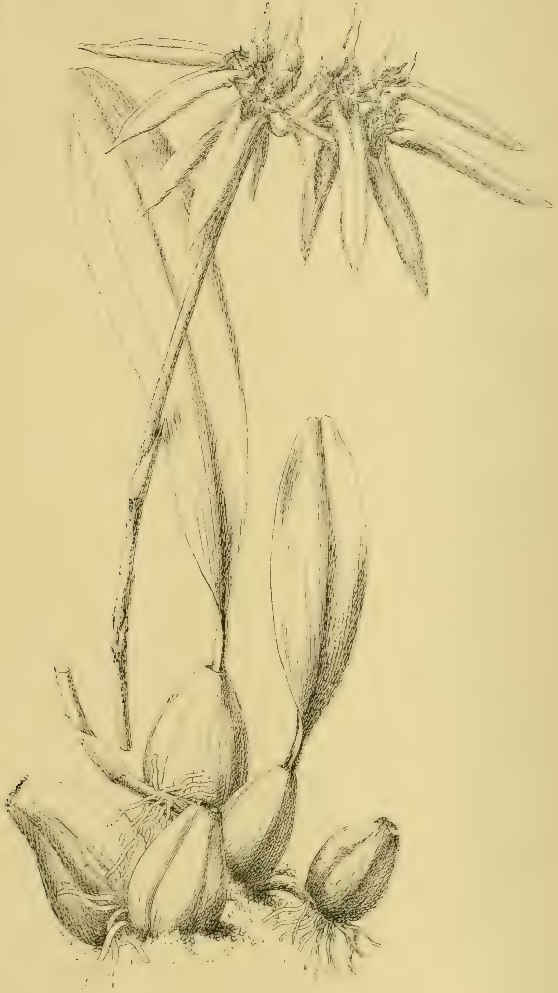
Culture.—These plants should be grown in baskets or upon blocks of wood or fern-stem, and suspended from the roof, where they may receive a goodly share of sun, air, and light. They enjoy a liberal supply of water during the summer months, and, even during winter, nothing like drying-off should be attempted, although, as a matter of course, much less water will be required. When the plants are flowering, carefully avoid sprinkling the blossoms with the syringe, and shade from the sun's rays, and then the flowers may be enjoyed for a long time. They all require stove treatment when growing, and a lower temperature whilst at rest and when in flower.

C. Cumingii.—This species is somewhat slender in growth, having small, four-angled pseudo-bulbs, oblong, blunt leaves, and large, regular, circular umbels of rich reddish-purple flowers in great profusion, elevated on thin, wiry stalks. The lateral sepals give a very peculiar appearance to the flower; they are 1in. long, linear-oblong, acuminate, projecting forward, and having a peculiar twist at the base, which brings the outsides of these two sepals on the same plane, their inner edges meeting together; the dorsal sepal and the petals are fringed with silky hairs, and the lip hangs so loosely that the slightest movement causes it to rock freely. The plant was introduced from the Philippines in 1839.

Botanical Magazine, t. 4996.

C. Medusæ.—This is a most singular species, robust in habit, and producing freely its singular, dense heads of blossom, which certainly have a striking resemblance to the fabled tresses of Medusa. The pseudo-bulbs are ovate, four-angled, and each bears an oblong, thick, fleshy, deep green leaf. The scape is erect, bearing a dense head of pale straw-coloured flowers, dotted with pink. Two out of the three sepals are lengthened into long, thread-like points, 4in. to 5in. in length, and to these the curious dishevelled appearance of the flower-head is due. It flowers during the summer months, and sometimes several times during the year. It is a native of Singapore, and was introduced to England in 1839.

Botanical Magazine, t. 4977.



CIRRHOPETALUM PICTURATUM

($\frac{2}{3}$ nat. size).

C. picturatum.—A free-growing plant, small in stature. The pseudo-bulbs are ovoid, and the leaves deep green. The scapes are thin and erect, bearing dense, circular umbels of emerald-green flowers, spotted with red on the shorter divisions; the two lateral sepals are prolonged and united so as to form a sleeve-like tube. It flowers in spring, and was introduced a few years ago from Moulmein.

Plate; Botanical Magazine, t. 6802.

C. Thouarsii.—This is a pretty-flowered species, of somewhat robust growth. The smooth pseudo-bulbs are produced from a creeping rhizome or stem, and bear a single, oblong, blunt, dark green, leathery leaf. The flowers are produced in umbels, on the apex of the slender scape; the long, strap-shaped sepals are of a tawny orange colour, whilst the remainder of the flowers are yellow, dotted with red. It blossoms during the summer months. Native of Java, Manilla, the Society Islands, and the Isle of Bourbon.

Botanical Magazine, t. 4237.

CHAPTER XXIII.

CŒLOGYNE.

Dr. Lindley established this genus in 1825, the first species described being the well-known C. cristata. The numerous species are confined to the tropical and subtropical parts of Asia. They are all epiphytes, with two-leaved pseudo-bulbs, distinct along the rhizomes, and have, as a rule, large, coloured, membranous flowers, with converging and slightly-spreading sepals, petals of like nature, but narrower, a great, cucullate (or hood-like) lip, usually bearing fringes on its veins, and a broad, membranous column. About sixty species have been described, many of which are in cultivation and are deservedly held in high esteem. Of these we have selected those most suitable for the amateur's collection, and which, with ordinary care, are easy to grow, and will flower freely. These, with few exceptions, are what may be termed intermediate-house plants; for, although they like a somewhat higher temperature during the growing season, they remain healthier, and flower more abundantly, if kept in such a house during the resting and flowering time.

Culture.—Basket- or pot-culture is suitable for most of these plants; for, although they may be grown upon blocks of wood when newly imported or when small, they are apt to dwindle away, instead of increasing in size, if permanently kept under this treatment. In preparing the pots for Cœlogynes, good drainage must be provided, as they require and enjoy an abundant supply of water during the growing season, though nothing stagnant or sour must be allowed to remain about the roots. For soil we should advise about equal parts of living sphagnum moss and fibrous peat, with the addition of a little silver sand. The plants should be raised upon a moderate-sized cone above the rim of the pot, and the soil firmly pressed about them. The time for re-potting or top-dressing Cœlogynes is just after the flowers are past; and as most of the kinds bloom during winter, this means re-potting about the middle of February. Those species which have long, pendent racemes are most conveniently grown in teak baskets suspended from the roof; indeed, almost any of the Cœlogynes may be treated in this way, if they are kept thoroughly moist whilst growing. As several of the kinds included here require tropical treatment, the temperature will be given for each.

We have already stated that these plants enjoy a copious supply of water during the growing season, but care must be taken that it does not lodge in the centre of the young shoots, or they will very likely damp off. When the growth is fully matured, an amount of moisture just sufficient to keep the pseudo-bulbs from shrivelling will be all that is necessary.

C. asperata.—This is a large-growing species, requiring the heat of a warm stove. It usually attains a height of about 2ft. The pseudo-bulbs are large and oblong, the stalked pair of broad leaves being dull green. The raceme is pendulous, about 1ft. in length, and many-flowered, each blossom measuring some 3in. in diameter. The sepals and petals are cream-coloured, as also is the ground-colour of the lip, which is marked with chocolate and yellow streaks and veins, radiating from a rich orange-coloured central ridge or crest. The plant requires tropical treatment and plenty of root-room. It blossoms during the summer months, and is a native of Borneo, whence it was introduced in 1845. Syn. *C. Lowii.*

Paxton's Magazine of Botany, xvi., p. 225.

C. barbata.—A free-growing, robust plant, with roundish egg-shaped pseudo-bulbs, and leaves in pairs, each being about 1ft. long and 2in. broad. Flower-spikes erect, bearing a cluster of short-stalked flowers, each of which is about 2½in. across; sepals and petals white; lip also white, with a margin or fringe of pale brown hairs, and three ridges in the centre, forming the crest. The plant requires cool-house treatment, and blossoms in January. It was introduced from North India in 1837.

C. corrugata.—This is a pretty autumn-flowering species, with pseudo-bulbs much corrugated or wrinkled (whence the specific name), and apple-green in colour. The leaves, which are produced in pairs, are about 6in. long, and leathery in texture. The racemes are erect, and shorter than the leaves; the sepals and petals are pure white; the lip is white, with a yellow plate in front, and veined with orange. It is a native of Khasia and the Neilgherry Hills, and thrives under cultivation in an intermediate house. It was introduced in 1863.

Fig. 32; Botanical Magazine, t. 5601.

C. corymbosa.—A beautiful plant, closely related to C. ocellata, but larger in all its parts. The pseudo-bulbs are oblong, about 2in. long, bearing each a pair of broad lance-shaped leaves, 6in. to 1ft. long. Flowers 3in. across, in pendent racemes of about three flowers each; colour pure white, with two large, orange-yellow spots on the front lobe of the lip, the throat being yellow and brown. Grown in a basket, or on a raft, this plant makes a handsome specimen, and when in flower it is a most beautiful Orchid. Introduced from Moulmein about 1866. It requires the same treatment as C. cristata. Syn. *C. ocellata maxima.*

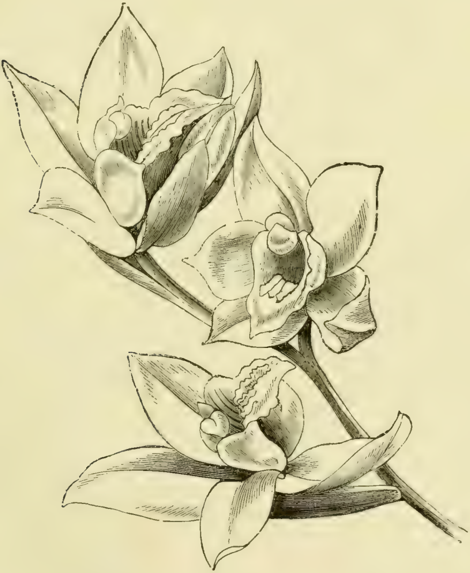


Fig. 32. Flowers of Cœlogyne corrugata
(nat. size).

Botanical Magazine, t. 5323.

C. cristata.—This is an Orchid which should find a place in every amateur's collection, however small. It is one of the most beautiful of all East Indian Orchids, and one of the easiest to manage in a plant-house. It is a healthy-looking plant when in growth during summer, and during winter it produces an abundance of flowers, which rival snow in their purity. They are elegant and graceful in form, large, and last a long time when cut and placed in water. In mid-winter a plant with qualities like these is of exceptional value. When growing, the temperature of the Cattleya-house suits this Cœlogyne admirably; but during winter it should be kept cooler: when in flower, it may be removed to the drawing-room or dining-room without fear of injury. It must, however, be placed in the greenhouse again as soon as the flowers wither, or the dryness of the atmosphere may cause the growths to be stunted, and thus one season's

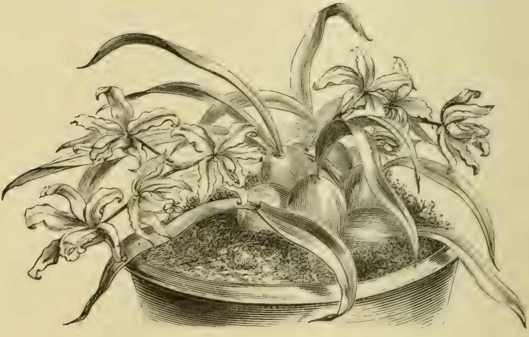
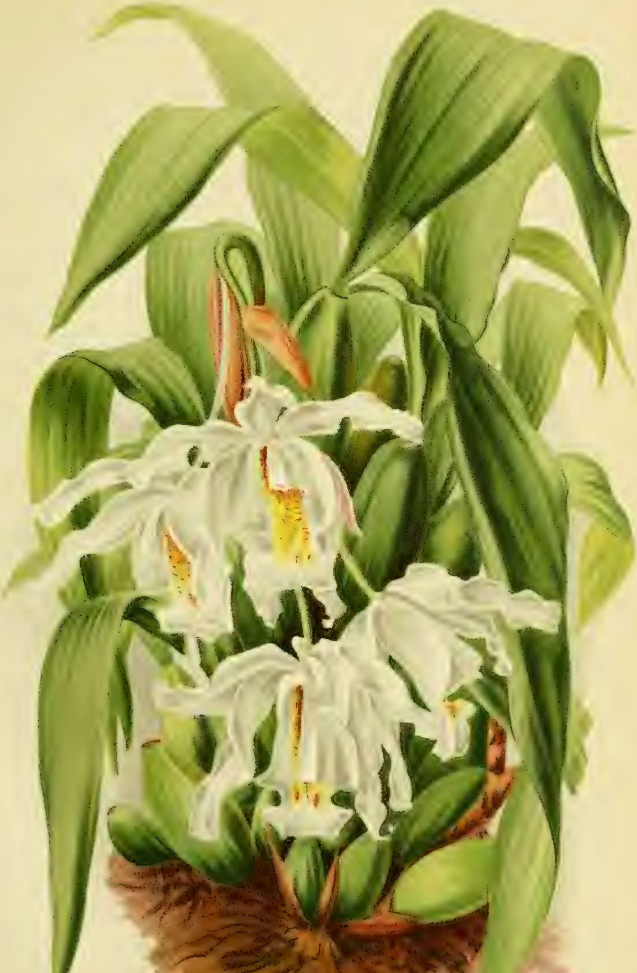


Fig. 33. Cœlogyne cristata
(much reduced).



[illegible] G. Severeyns

CŒLOGYNE CRISTATA

RÉDUITE

blossom would be lost. The pseudo-bulbs are oblong or almost spheroid, smooth and shining, and apple-green in colour, bearing a pair of narrow, leathery, dark green leaves. The raceme is somewhat drooping, many-flowered, about 9in. in length; the blossoms are fragrant, and from 3in. to 5in. in diameter. The sepals and petals are snow-white, the former being broad and wavy, the latter narrower; the lip is also white, with a large blotch of rich yellow in the middle, the ridges or crest being ornamented with a golden fringe, to which the plant owes its specific name. The flowers, which are fragrant, are developed along with the young growth from Christmas to March, and, if not sprinkled with water, will last long in perfection. Cultivated plants sometimes attain a remarkable size, as many as 500 or 600 pseudo-bulbs, bearing upwards of 100 spikes of snow-white flowers, with foliage of a beautiful fresh green, having been counted on one plant. Native of Northern India; introduced in 1837.

Coloured Plate; Fig. 33; Botanical Register, xxvii., t. 57.

Var. *alba* has every part of the flower of the purest white.

Var. *Chatsworth* has large pseudo-bulbs and fine flowers of unusual substance.

Var. *Lemoniana* flowers about a month later than the type, and has the blotch on the lip pale citron-yellow.

Var. *maxima* has larger flowers than the type.

C. Dayana.—A most beautiful plant when in flower, but at present very rare. The pseudo-bulbs are long pear-shaped, with stalked, ovate, pointed leaves, and pendulous spikes, 2ft. or more in length, bearing numerous flowers, which are pale ochre-yellow, with broad stripes of dark brown on the side lobes of the lip, and a crescent-shaped band of brown on the front. Each flower is nearly 2in. across, the sepals and petals being ligulate-acute, and the lip broad, three-lobed, and wavy; it is not unusual for a spike to bear two dozen or more flowers. This species requires stove treatment, and should be planted in well-drained peat and sphagnum, in a basket. It blossoms in summer, and is a native of Borneo, whence it was introduced in 1884.

C. flaccida.—This is an erect-growing species, with oblong pseudo-bulbs, each bearing a pair of leathery, dark green leaves. The racemes are long, pendulous, and many-flowered; the sepals and petals are white, as is also the ground-colour of the lip, which is stained with pale yellow in front, and streaked with crimson towards its base. The flowers are produced during winter and spring, and continue in full beauty a long time. The scales at the base of the raceme are remarkable for their scorched appearance. This species should be grown in the intermediate house; it is a native of Nepal, and was introduced in 1833.

Botanical Magazine, t. 3318.

C. fuscescens.—A fine, bold-growing species, producing terete pseudo-bulbs 4in. to 5in. high. The leaves are broad and plaited, and about 9in. long. The raceme is few-flowered, and slightly pendulous; the flowers are large, having sepals and petals of a pale yellowish brown, tipped with white, a lip edged with white and streaked with orange-yellow, and two spots of cinnamon-brown at the base. It blossoms during the winter months, continuing in beauty for several weeks. It was introduced in 1848, and grows freely under ordinary Cattleya treatment. Native of Moulmein.

Botanical Magazine, t. 5494 (var. *brunnea*).

C. Gardneriana.—This is a very distinct and attractive species, in which the pseudo-bulbs are smooth, long, and narrow, tapering from the base upwards, and resembling long flasks; each bears a pair of thin, lance-shaped, bright green leaves, from 1ft. to 1½ft. long and 3in. wide. The raceme is long and nodding, bearing many large, long-petaled flowers, which are pure white, except the base of the lip, which is stained with lemon-colour. The bracts at the base of the flowers are large and white. The flowers do not open fully. It should be cultivated in an intermediate house, and be kept free from thrips, which are very fond of its young leaves. It blossoms during the winter months. Native of Nepal and Khasia, at about 4000ft. elevation; introduced in 1837.

Paxton's Magazine of Botany, vi., 73.

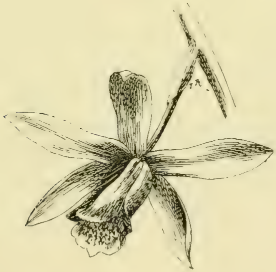


Fig. 34. Flower of Cœlogyne Massangeana
(⅔ nat. size).

C. Massangeana.—One of the handsomest of Cœlogynes, and a first-rate grower when properly treated. The pseudo-bulbs are 3in. to 4in. long, pear-shaped, and two-leaved. The flower-spikes are pendent, and sometimes 2ft. long, bearing a score or more flowers, each being 2in. across; the sepals and petals are light ochre-yellow, and the lip is deep crimson-brown, with lines of yellow, the front lobe being white at the edge, with a blotch of brown in the centre, through which run three yellow keels. It should be grown in a Cattleya or intermediate house, in a basket suspended from the roof, and be watered liberally when growing. Native of Assam; introduced in 1879.

Fig. 34; Williams' Orchid Album, i., t. 29.

Probably the plant known as C. *tomentosa* is merely a variety of this.

C. ocellata.—A pretty little species, admirably adapted to basket-culture. The pseudo-bulbs are small and ovate. Leaves long, narrow, and bright green. Flower-spikes erect; the sepals and petals pure white, as is also the lip, which is curiously fringed or crested, and streaked and spotted with yellow and brown at the base; on each of the side lobes there are two bright yellow, eye-like spots, from which the plant takes its specific name. It usually flowers abundantly during the months of March and April, and should be grown in an intermediate house. It is a native of Sikkim, at 7000ft. elevation, whence it was introduced in 1822.

Botanical Magazine, t. 3767.

C. odoratissima.—This is of dwarf habit, with the pseudo-bulbs in dense tufts, about 1in. high, each bearing a pair of pale green leaves, 4in. in length. The raceme is slender and drooping, bearing sweet-scented flowers; these are pure white, except the centre of the lip, which is stained with yellow. It succeeds in a cool house, being found in large masses on the summits of the highest Neilgherry Hills, but always on the north side, and frequently growing among stones and wet moss. It flowers in April. Introduced in 1864.

Fig. 35; Botanical Magazine, t. 5462.

C. pandurata.—A very striking species, remarkable for the singular colours of its flowers. The pseudo-bulbs are large, broadly ovate, compressed at the edges; they are several inches apart on the stout, creeping, woody rhizome. The leaves are 1ft. or 1½ft. long, plaited, broad, stout and leathery, and bright shining green in colour. The raceme is pendulous, longer than the leaves, and many-flowered, each flower being upwards of 3in. in diameter and very fragrant; the sepals and petals are bright green; the lip is of the same colour, with the addition of several deep velvety black, raised ridges or crests running parallel upon its surface; in shape it is

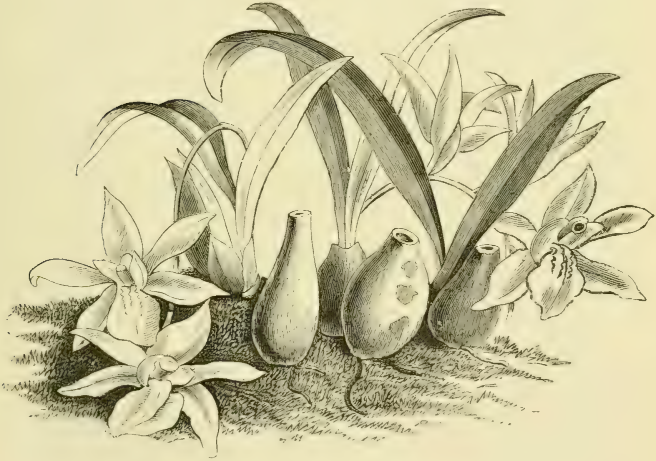


Fig. 35. Cœlogyne odoratissima
(⅔ nat. size).

oblong, warty on the front, and curiously bent down at the sides, assuming somewhat the form of a violin, from which the plant takes its specific name. This species is a native of Borneo, where it grows on trees overhanging water in shady places, and blossoms during June and July. It requires tropical treatment all the year round, and thrives best when grown in a long basket, so that the rhizomes have room to develop. It first flowered in England in 1853.

Botanical Magazine, t. 5084.

C. Parishii.—A small species, with four-angled, narrow pseudo-bulbs, 4in. long, each bearing a pair of broad, stout leaves, and a six-flowered raceme. The flowers are like those of C. pandurata, but smaller; they are produced in April and May, on plants grown in an intermediate house and kept saturated in the growing season. A native of Moulmein; introduced in 1862.

Botanical Magazine, t. 5323.

C. Sanderiana.—A new introduction, and a most beautiful one. It is not unlike C. cristata in its flowers, but is quite different from that species in other respects, and especially in the treatment it requires. The pseudo-bulbs are ovate, 2in. long, wrinkled, and bear each a pair of leaves. These are 1ft. long, 2in. wide, ribbed, stalked, and dark green. The flowers are produced in loose racemes on the young growths, each raceme bearing about six flowers, which are 3in. across, snow-white, the sepals narrow, pointed, and keeled, the petals broader, and the lip three-lobed, the side lobes being striped with brown and the front lobe blotched with yellow. It requires tropical treatment, and plenty of water always. Introduced in 1887 by Messrs. Sander and Co.

C. speciosa.—The pseudo-bulbs in this are large and oblong, each bearing a thin, dark green leaf about 9in. long. The flowers are produced singly or in pairs at the end of a slender peduncle, each flower measuring upwards of 3in. in diameter. The sepals and petals are brownish or olive-green, the latter being longer and narrower than the sepals. The lip is beautiful, both in colour and marking, and in the exquisite fringe of the crests and margin: it is yellow, veined with dark red; at the base it is dark brown, and at the apex pure white. It is three-lobed, the lateral lobes small and resembling ears. Two long crests run nearly the whole length of the lip, and are copiously fringed with hairs. A native of Java; introduced about 1845. It is a free-growing and free-flowering plant, requiring the same treatment as C. cristata.

Botanical Magazine, t. 4889.

CHAPTER XXIV.

COLAX.

THE present genus is very closely allied to Lycaste—indeed, so closely that some authors now include it in that genus. The chief point of distinction lies in the shape of the flowers, which in Colax is sub-globose, and the segments are broad and spreading. A hybrid between Colax and Zygopetalum has lately been raised and flowered by the Messrs. Veitch. There are two species, but only one is worth growing.

Culture.—C. jugosus should be treated as a pot-plant, the pots being thoroughly drained, and the compost formed of living sphagnum moss and good peat, to which may be added some medium-sized lumps of charcoal. When potted, it should be placed in the Cattleya-house and subjected to the same treatment as other Orchids from the warm parts of Brazil. It likes plenty of water during active growth.

C. jugosus.—This plant seldom exceeds 1ft. in height. The pseudo-bulbs are smooth, and somewhat ovate, about 2in. long, bearing a pair of dark green leaves, 6in. to 9in. long, upon their summit. The scape is erect, rising from the base of the pseudo-bulbs, and produces two or three flowers, which are 2in. in diameter; the sepals and petals are creamy white without—the latter, however, are beautifully banded with transverse stripes of rich deep bluish purple on the inside (Dr. Lindley describes them as speckled with crimson, but this is at any rate by no means usual); the lip is three-lobed, with fleshy ridges, white, and striped and veined with deep velvety purple. This plant, when healthy, flowers freely during the months of April and May.

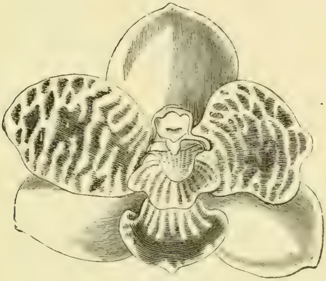


Fig. 36. Flower of Colax jugosus
(nat. size).

Fig. 36; Botanical Magazine, t. 5661.

CHAPTER XXV.

CORYANTHES.

THIS is a genus of South American Orchids, with flowers of such an extraordinary character that a correct idea of their structure and appearance can only be obtained by seeing them. The plants themselves are, in habit, similar to Stanhopeas, having lance-shaped, plaited leaves upwards of 1ft. in length, and pendent racemes of flowers produced from the base of the pseudo-bulbs. The remarkable feature of the flower is the lip, which is helmet-shaped, and is attached to the rest of the flower by a thick, hooded stalk. Near the base of this stalk a sweet, watery fluid is secreted, which, during the time the flower is in full development, drips continuously into the helmet-shaped part. The sepals and petals decay soon after opening, and the lip lasts only three or four days in perfection.

Culture.—Coryanthes require to be grown in baskets, in a compost of sphagnum and peat fibre, and as they need abundant supplies of water when growing, perfect drainage is essential. The plants grow naturally on the outer branches of trees, fully exposed to the sun, and therefore it is advisable, if possible, to place them along with the Dendrobiums and other heat- and light-loving Orchids. After the completion of the growth, the plants should have a drier position, and water should be withheld as much as possible without allowing the pseudo-bulbs to shrivel.

C. macrantha.—This remarkable plant flowers during the summer months, and bears a pendulous scape with two or three flowers, each measuring, when fully expanded, nearly 6in. in diameter. The sepals and petals are yellow, irregularly spotted with purplish red; they are very delicate in texture, and soon fade. The lip is fleshy and solid, with the pouch 2in. in diameter, and of a brownish-yellow colour, the projecting arm which supports it being dark purple. A powerful and agreeable odour is emitted by the flowers on first opening. This species—the finest of the genus—was introduced from Caracas about 1840. It

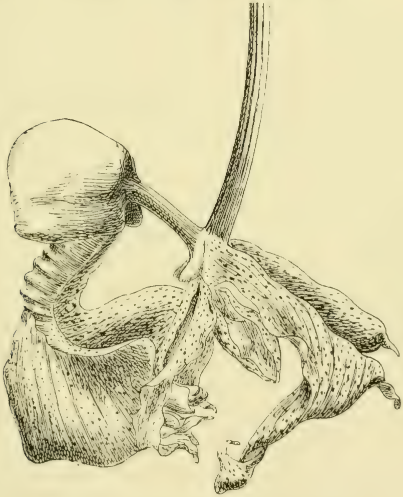


Fig. 37. Flower of Coryanthes macrantha
(½ nat. size).

is a most difficult Orchid to manage in cultivation, and has rarely flowered in England; yet it is one of the most wonderful of all Orchids.

Fig. 37; Botanical Register, 1841, t. 22.

C. maculata.—A species with clustering, striated pseudo-bulbs, 5in. to 6in. in length, and tapering upwards. The leaves are two in number, broadly lance-shaped and somewhat membranous. The flowers are borne six to ten together on a pendent scape, and are of a pale brownish-yellow, the lip being tinged and spotted with purple. This species is found growing on the branches of trees in Demerara, and was introduced into this country in 1829.

Botanical Magazine, t. 3102.

Var. *punctata* is an improvement on the type; the sepals and petals are thickly spotted with deep wine-purple, and the lip is also blotched with the same colour, the pouch being almost entirely purple.

C. speciosa.—In the size and form of its pseudo-bulbs and foliage this resembles C. maculata. The scape is pendent, three-flowered, and each flower is about 3in. across, of a dull pinkish colour, spotted with dark brown, faintly and not agreeably scented. This species is a native of Demerara, where it is common on large trees, forming large masses of closely-woven roots and pseudo-bulbs, which are usually the abode of families of stinging ants. Collectors find great difficulty in procuring these plants because of the pertinacity of the ants. All the Coryanthes have this character.

CHAPTER XXVI.

CYCNOCHES.

ABOUT a dozen species of this singular genus have been introduced into this country at various times, and, although scarcely any are grown nowadays, they are all of great interest, and some of considerable beauty. They resemble Catasetum in many respects, notably in the property some species have of producing two different kinds of flowers on the same plant. The thick and fleshy pseudo-bulbs are usually from 6in. to 10in. high, and bear several pointed, stoutly-ribbed leaves. The flowers are produced from the upper part of the pseudo-bulb, and are generally large; their most prominent character lies in the long, slender column, which curves gracefully, and by somewhat resembling the neck of a swan suggested the generic name—Cycnoches, or Swan's-neck. The plants are commonly known as "Swan Orchids." All the species are natives of tropical America.

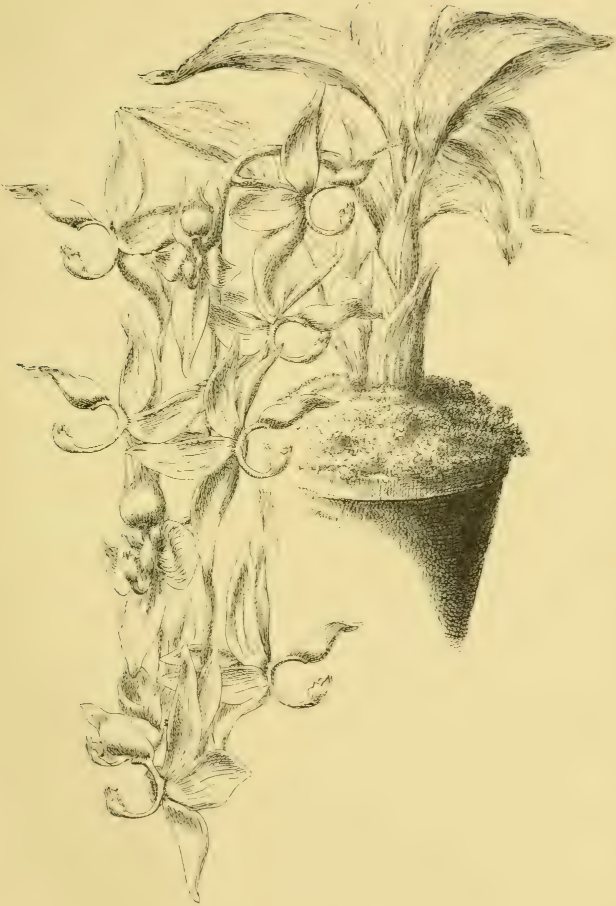
Culture.—These plants should be grown in fibrous peat and sphagnum, to which a little loam fibre and silver sand may be added. They will succeed in either pots or baskets, provided these are well drained. They require when growing a light position in a tropical, moist house, with copious waterings at the root; it is advisable, however, to avoid wetting the foliage, as the centres of the growths are liable to rot if water is allowed to remain there. The leaves drop off in autumn, when the plants should be removed to drier quarters, and water almost entirely withheld until growth recommences.

C. aureum.—A handsome species, bearing numerous large, yellow flowers, closely arranged on a drooping raceme. The sepals and petals are lance-shaped, and dotted with purple, the latter being curved in at the tips. The lip is small and much divided, and the gracefully-curving column is marked with purple dots. Introduced from Central America in 1851.

C. chlorochilon.—A striking species, and one of the largest-flowered, with fleshy pseudo-bulbs 1ft. high, and ribbed leaves of the same length. The flowers, which are borne on curving scapes from 8in. to 12in. long, are fragrant, and measure 5in. across. The sepals and petals are yellowish green, and the lip (in the plants we have seen) is ivory-white, with a bronzy-green blotch in the centre; in some forms this blotch is bright yellow. The column is 2in. long, and curved, whilst at the apex, where the pollen-masses are inserted, it is swollen into a roundish knob. This species is of easy culture, and flowers freely about June or July. Some varieties produce only three flowers on a scape, whilst in others we have seen as many as ten. A native of Demerara; introduced in 1838.

Plate.

C. ventricosum.—This produces several—usually two—racemes of flowers from the axils of the upper leaves on the last matured pseudo-bulbs; each raceme bears five flowers, and each flower has lanceolate sepals, the petals being curved downwards, and light green in colour.



CYCNOCHES CHLOROCHILON

(much reduced).

The lip is white, with a black callosity on the short claw which connects it with the column. The strange behaviour of this plant when it was first introduced caused no little surprise amongst botanists, and led to a careful investigation of the whole genus by Dr. Lindley. He wrote of C. ventricosum: "Such cases shake to the foundation all our ideas of the stability of genera and species, and prepare the mind for more startling discoveries than could have been otherwise anticipated." At one time it produces large green flowers, in a short spike, with broad flat sepals and petals, and a white convex lip, and at another bears small blackish flowers in a very long drooping spike, the narrow sepals and petals folded back, the labellum disk-like, with a horn in the middle and projecting finger-like divisions round the edge. On one occasion these two distinct kinds of flowers were produced on the same spike. Native of Guatemala; introduced in 1842.

Botanical Register, 1843, t. 22.

C. Warscewiczii.—This plant also sometimes produces on one raceme flowers of quite a different appearance to those produced on another. It is supposed to be a sexual form of C. ventricosum, notwithstanding that both have been described, and are now cultivated, as distinct species. The larger, or female, flowers occur three or four together on a short raceme, and have broad sepals and petals, and a broad, pale green, undivided lip. The smaller, or male, flowers are produced on a long, pendent raceme of twelve to eighteen; they are wholly pale green except the lip, which is yellow, and much divided. In these flowers the column is long and curved, whilst in the larger form it is short and club-shaped. A native of Guatemala; introduced in 1879.

CHAPTER XXVII.

CYMBIDIUM.

About thirty species are included in this genus, but only a small proportion of this number are considered ornamental enough to be classed among garden plants. The genus is represented in almost all parts of tropical Asia. Most of them have Flag-like foliage, the growths clustering, and the flower-spikes nearly always erect. Those mentioned below have large, fleshy flowers; the sepals and petals equal; the lip three-lobed, the two side lobes erect and half-inclosing the column, the front one tongue-shaped, with two elevated ridges.

Culture.—Cymbidiums are not difficult to grow when once established; but, on account of their thick, fleshy roots, they are by no means easy to restore if imported in a bad state. They succeed best under pot-culture, and should be placed in good rough peat, sphagnum moss, and a little sharp sand. Some growers mix turfy loam with the peat, and as a rule the plants thrive in this. They must never be dried, or the loss of many leaves will follow, to the great disfigurement of the plants; they require water at all seasons, but there must be a great difference made in the quantity supplied during the summer and winter months. A warm, sunny corner in the Cattleya-

or intermediate-house is the best position for them. When not growing, keep them cooler, and at all times supply plenty of fresh air, avoiding cold chills. Many of the species have small and inconspicuous flowers, but the following are well worth growing.

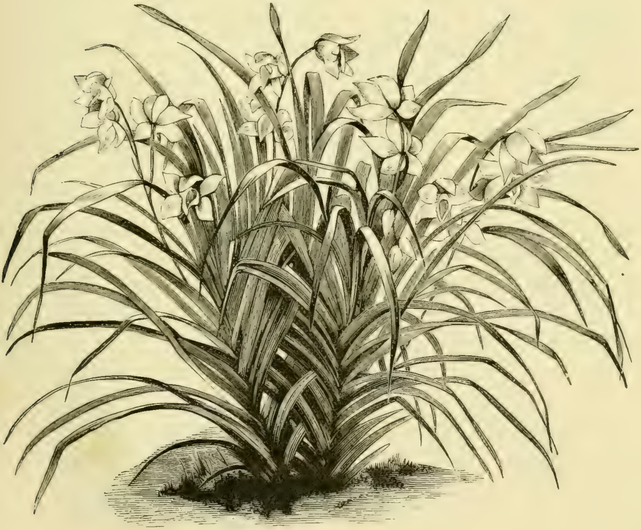


Fig. 38. *Cymbidium eburneum*
(much reduced).

C. eburneum.—A deservedly popular species, in which the leaves are narrow and sword-shaped, arranged in a distichous manner, bright light green in colour, and about 2ft. long. With age the plant forms a stout, stem-like pseudo-bulb, but when young it shows no sign of this. The raceme is erect, 8in. to 12in. long, and bears one or two beautiful, large, fragrant flowers, which have ivory-white sepals and petals, and the lip white, stained with pale yellow, their odour resembling that of lilac. The blossoms are developed in spring, about March, and they last several weeks in perfection. A well-grown, well-flowered specimen of this Orchid is a beautiful object. The species is a native of Burmah, Bengal, China, &c., and was introduced in 1846.

Fig. 38; Botanical Magazine, t. 5136.

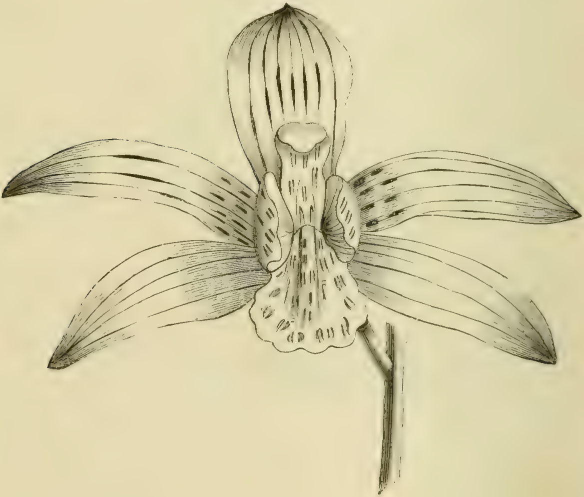


Fig. 39. Flower of Cymbidium giganteum
(nat. size).

C. giganteum.—This is a strong and bold-growing species, which, on account of its rather shy-flowering habit, has not found so much favour with Orchid-growers as it otherwise deserves. The spike is stout, arching, and many-flowered; the blossoms are large, with brown sepals and petals, and a brown lip, stained with yellow and blotched with crimson. The plant has a distinct pseudo-bulb, which is clothed with the broad, sheathing bases of the long, sword-like leaves. It blossoms during the winter and early spring, lasting several weeks in full beauty. It requires tropical treatment and plenty of water. It is a native of Northern India, where it was discovered by Dr. Wallich; introduced in 1837.

Fig. 39; Botanical Magazine, t. 4844.

C. Hookerianum.—A large and handsome plant, not unlike C. giganteum in habit, the leaves being 2ft. long, green, striped at the base with yellow. The flower-spike is erect, arching above, and the flowers are 4in. to 5in. in diameter, bright yellow-green, except the lip, which is straw-coloured, with a deep yellow margin, and blotches of deep crimson in front; there are also two crimson projections on the disk. It flowers in autumn, the blossoms lasting well if kept in a cool temperature. The plant is a native of Sikkim-Himalaya, and was introduced in 1866.

Botanical Magazine, t. 5374.

C. Lowianum.—This splendid plant is almost identical with C. giganteum in habit and general appearance; in fact, when first introduced it was distributed as a form of that species. The stout flower-spikes are from 2ft. to 4ft. long, arching, and clothed almost from base to point with flowers, each of which is 4in. across; the sepals and petals are equal, spreading, yellowish-green, with lines of brown, and the lip is scoop-shaped, with large, erect, yellow side lobes, the front being coloured deep maroon in the best varieties, brownish red in others. The flowers are developed in March or April, and they remain fresh several weeks. This plant now occupies a first position among exhibition Orchids. It requires stove treatment, an abundant supply of water all summer, a mixture of fibrous loam and lumpy peat, and a solution of cow-manure when the flower-spikes are forming. When in blossom, the plants should be removed to a greenhouse temperature. The species is a native of Burmah, and was introduced in 1878.

Floral Magazine, ser. ii., t. 353.

C. Mastersii.—In general appearance the growth of this species resembles C. eburneum. The leaves are, however, longer, broader, and more recurved, and are destitute of that close-sheathing base which is a striking feature in the latter plant. The spike is erect and many-flowered, the flowers being very much smaller than those of C. eburneum; they are pure ivory-white, with a yellow throat; the lip is spotted in front with rose-purple. It blossoms during winter, and remains long in flower, having an almond-like fragrance. A native of Assam; introduced in 1841.

Botanical Register, 1845, t. 50.

C. Parishii.—This is similar in habit to C. eburneum, but the leaves are broader. The spikes are erect, usually three-flowered, each flower of the same size as in C. eburneum; the sepals and petals creamy white; the lip white, with a band of deep orange in the centre, and spotted with purple; the side lobes are also spotted with purple; the column is white, with yellow edges. A rare but exceedingly beautiful Orchid. Introduced from Burmah in 1874.

Williams' Orchid Album, t. 25.

C. pendulum var. **purpureum.**—The normal form of this species is very handsome; but, as the majority of amateurs are limited to space, we can scarcely recommend them to grow it and the present variety also, which is very superior. The leaves are semi-erect, long, and narrow, very thick, leathery, and dark green. The spikes are pendulous, from 1ft. to 3ft. long, bearing many flowers of great substance. The sepals and petals are deep purple inside, yellow outside; the lip white, spotted and blotched with crimson. It blossoms during the spring months, and is a native of Northern India. Introduced in 1848.

Botanical Magazine, t. 5710.

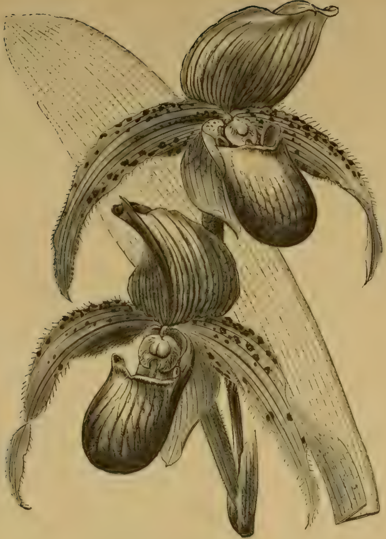
C. tigrinum.—A dwarf plant, with compact pseudo-bulbs, erect, few-flowered spikes, altogether unlike the other species of this genus. The bulbs are as large as walnuts, furrowed, wrinkled, with two leaves on the apex and one on each side at the base. The leaves are strap-shaped, 4in. long, leathery, and grey-green. The scape springs from the base of the matured bulb, and is about 6in. high; it bears about three flowers, each of which is over 3in. across. The two lower segments hang downwards, and the other three are almost erect; they are green, tinged and spotted with brown. The lip is large, three-lobed, the side lobes erect, and the front one spreading; it is white, with large blotches and spots of crimson. A native of Tenasserim; introduced in 1864.

Botanical Magazine, t. 5457.

CHAPTER XXVIII.

CYPRIPEDIUM.

THIS is one of the most distinct genera of the whole Orchid family, whether looked at from a botanical or from a horticultural point of view. When speaking of the structure of the flower in Orchids it was remarked that one characteristic of the family was its possessing only one perfect stamen, the two lateral ones being abortive. To this rule the Cypripedeæ form the sole exception, possessing, as they do, two fertile lateral stamens, the central one (which is fertile in other Orchids) being represented by a broad, shield-like plate. How widely the flowers of the genus differ in general appearance from those of other Orchids may be gathered from a glance at any of the figures which accompany the descriptions of the species. The large, inflated pouch which is formed by the labellum suggested not only the English name of the genus—for this is one of the few Orchid genera which possess an English name—but also the Latin Cypripedium, or "Venus' Slipper." Previous to this, however, our European species (C. Calceolus) had been known as Calceolus Mariæ, or "Mary's Shoe," and to this the English name, "Lady's Slipper," may be traced—"Our Lady" being the old English, as "Notre Dame" is the modern French, designation for



FLOWERS AND LEAF OF CYPRIPEDIUM SELLIGERUM

(nat. size).

the Blessed Virgin. C. Calceolus has a similar name in all European languages; the North American species are known as "Mocassin Flowers."

The pouch has considerable influence upon the fertilisation of the flower. Sir John Lubbock, speaking of C. longifolium, says: "The opening into the slipper is small, and partly closed by the stigma and the shield-like body which lies between the two anthers. The result is that the opening into the slipper has a horseshoe-like form, and that bees or other insects which have once entered the slipper have some difficulty in getting out again. While endeavouring to do so, they can hardly fail to come in contact with the stigma, which lies under the shield-like representation of the middle anther. As the margins of the lip are inflected, the easiest exit is at the two ends of the horseshoe-like opening, through which the insect generally escapes; in doing this, however, it almost inevitably comes in contact with and carries off some of the pollen from the corresponding anther. The pollen of this genus is immersed in a viscid fluid, by means of which it adheres firstly to the insect, and secondly to the stigma, while in most Orchids it is the stigma that is viscid."

Several botanists have separated the South American species from Cypripedium on account of slight differences in the structure of the seed-vessel, and also in habit. For these the name *Selenipedium* is proposed; but for garden purposes there does not appear to be any good reason for this division: consequently, we have included here those plants which are sometimes called *Selenipedium* or *Uropedium* in the genus Cypripedium.

The genus Cypripedium is very widely distributed: "great numbers of species occur in both the Old and New World, in the ice-bound woods of Canada and Siberia, the warm glades of Mexico and Nepal, and in the torrid regions of

Central India and continental (not insular) America" (Veitch). One species, C. Calceolus, is a native of England. Those belonging to temperate regions have erect, leafy, annual stems, while the Indian species are stemless, with usually solitary blossoms. We have already referred to the remarkable pouch by which the flowers are characterised: it may be added that the top or dorsal sepal is in nearly all cases very conspicuous, being large, spreading, and usually most attractive in colour; the two lower sepals are generally much smaller, united, and, as a rule, unattractive; the petals are narrow and long, extending sometimes into slender, tail-like appendages of extraordinary length. The blossoms are very variable in colour, yellow, white, purple, red, pink, brown, and green, being represented. In some instances, they are beautifully spotted and lined. There is considerable variety in the leaves; those of C. caricinum are like grass or sedge; while in C. palmifolium, a tall-growing species of the sandy Savannahs of Guiana, they are hard, like those of a Palm. This latter has not yet been brought into cultivation. The genus was founded by Linnæus, in 1737, upon the European species, C. Calceolus. It may be noted that the fruit of one species C. (Selenipedium) Chica, which does not appear in our list, is highly esteemed as an aromatic by the inhabitants of the Isthmus of Panama, who employ it as a substitute for vanilla. Another species (C. pubescens) is used in medicine.

Culture.—The compost most suitable for the cultivation of these plants consists of two parts good fibrous peat, one part live sphagnum moss, a little charcoal, and a portion of sharp silver sand. In potting, the drainage must be thorough and effective; for as these plants have no pseudo-bulbs, they must not be dried off as the majority of Orchids are during winter, and therefore, if the drainage is not good, the roots are sure to decay, and the leaves will shrivel. The roots should be spread out amongst the potting mixture, which should be pressed in firmly and at once well watered. The key to the successful management of Cypripediums is the watering-pot. All the species like plenty of water *at the roots* all the year round. The atmosphere about them, too, should be constantly saturated, but the leaves should not be wetted beyond a light syringing in the evening of hot days. When Cypripediums show signs of bad health, they should be at once shaken free of soil, the roots carefully washed, all rotten portions cut away, and the invalids then planted in clean living sphagnum and sand, in small pots. They must be kept moist, in a warm, shaded stove, till they recover, when they may be re-potted into the proper mixture. Except very few species, all the Cypripediums require tropical treatment all the year round.

During the last ten years Cypripediums have received more attention from hybridists and specialists, as well as from horticulturists generally, than any other genus of Orchids. The exceptional form and, almost invariably, attractive colours of the flowers, their great lasting qualities, the ease with which the majority of the kinds can be cultivated, and the comparatively short time it takes to grow a small plant into a specimen—all these are points which have favoured the Cypripediums as garden plants. But their great interest and value in horticulture is seen in their plastic nature in the hands of the hybridist. There are more hybrids of Cypripediums than of all other Orchids put together. Hybrid Orchids almost invariably fetch high prices. Many of the hybrids are exceedingly beautiful, and quite distinct in character; but a good many more are poor, and scarcely worth growing, except, perhaps, as hybrid curiosities. There are also a very large number of varieties, both of species and hybrids, all of which have names:

indeed, there are a great many more names than there are distinct kinds. However, this is the case with all races of plants which have become popular in gardens. One has only to consider what has been done to improve the genus Cypripedium in a garden sense, the variety of form and colour added, the improvement in constitution and floriferousness, for which we are indebted to hybridisers and specialists, and we can afford to look beyond the fault of over-numerous names. The Cypripediums may be considered an established and valuable addition to horticultural plants, in this respect taking rank with such favourites as Gloxinias, Begonias, Anthuriums, &c.

It will be obvious that Cypripediums have an exceptional claim to consideration in a work intended for amateurs. To enumerate here all the named sorts would be going to unnecessary length; but all that are distinct and interesting enough to cultivators are included. The number of true species named by botanists is about 110; of named hybrids there are more than 100; whilst the varieties of species and hybrids which have names number over 150. This gives a total of above 350 named kinds of Cypripedium known in gardens at the present time. There are several private gardens in England, and at least one in France, where almost every one of these named kinds is cultivated. Such collections represent several thousands of pounds in value.

The hybrid kinds are arranged together at the end of the present chapter, and the hardy species will be found included in the chapter on Hardy Orchids.

C. Argus.—Habit of C. barbatum. Leaves 6in. to 8in. long, 1in. broad, variegated with dark green on a yellowish-green ground. Flower-scape central, 1ft. high, single-flowered; dorsal sepal large, white, striped with green and purple; petals 3in. long, deflexed, wavy, white, with green stripes and rosy tips, the surface covered with purple eye-like spots; pouch broad, brown-purple. This requires tropical treatment. It flowers in March or April. Native of the Philippine Islands; introduced in 1873.

Botanical Magazine, t. 6175.

There are several named varieties, the best of them being *Moensii*, which has larger flowers, with petals more thickly spotted, than the type.

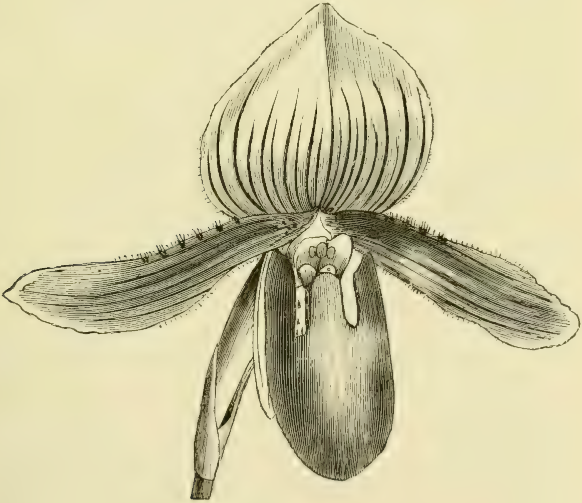


Fig. 40. Flower of Cypripedium barbatum
(¾ nat. size).

C. barbatum.—An old favourite, which is still very popular, on account of both its variegated foliage and the large, dark-coloured flowers. The leaves are strap-shaped, about 6in. long, leathery, channelled, light green, prettily blotched and spotted with dark green. The flowers are borne singly, on erect scapes about 1ft. high. The dorsal sepal is large and broad, the lower portion being green, beautifully striped with purple, the upper half pure white; the petals are similar in colour, and ornamented with several tufts of black hairs, which are produced from the purple shining warts bordering the upper edge; the pouch is large, helmet-shaped, and blackish purple in colour. The plant blossoms during spring and summer, and lasts many weeks in full beauty. It is a native of the Malay Peninsula, and was introduced to our gardens in 1840.

Fig. 40; Botanical Magazine, t. 4234.

There are about twenty named varieties of this species. Many of these closely resemble each other. The most distinct are:

Var. *biflorum.*—Leaves narrower, and flowers smaller, than in the type; scape about 10in. high, usually two-flowered. Syn. var. *Warnerianum.*

Var. *nigrum.*—Flowers very large, and much darker than in the type. This is sometimes called *giganteum.*

Var. *superbum.* — Leaves more clearly variegated. Flowers distinct in colour, the purple being deeper, and the white purer, than in the type.

C. bellatulum.—A very pretty species, belonging to the same group as C. Godefroyæ, C. concolor, &c., but larger than any of them. The largest leaves are leathery, 10in. long, and 3in. in width, green, with grey marbling above, dotted with purple beneath. Scape 3in. to 4in. high, bearing one large flower, 3in. in diameter, white, spotted all over with purple-black, some of the spots being large; the dorsal sepal is almost round, concave, hairy on the outside; petals large, almost as broad as long, the lower edges meeting behind the labellum; pouch small, as in C. concolor. Hitherto this species has flowered at various seasons. It is easily grown, requiring a tropical temperature, with plenty of moisture; but water should not be allowed to lodge in the bases of the leaves. It thrives best when potted in a mixture of turfy loam and peat, in equal parts, with a few nodules of limestone added. The flowers are very varied in their marking. Native of islands near Cochin China; introduced in 1888.

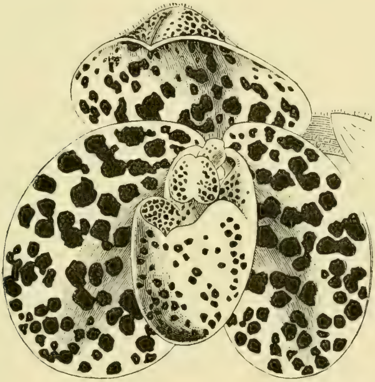


Fig. 41. Flower of Cypripedium bellatulum
($\frac{2}{3}$ nat. size).

Fig. 41, for which we are indebted to the Editor of the "Gardeners' Chronicle."

C. Boissierianum.—A rare and exceedingly interesting plant, of recent introduction. It belongs to the Selenipedium section. The foliage is narrow, grass-like, 1ft. to 2ft. long, somewhat recurved, and shining green. The scape is erect, as long as the leaves, branching, many-flowered, the flowers expanding in slow succession. The flower is 6in. across; the dorsal sepal is narrow, curved forwards, crisp-edged; the petals are 3in. long, ¼in. broad, crisp-edged and twisted, and they stand out horizontally; the pouch is 1½in. long, 1in. broad, rounded and smooth like an egg, save at the mouth, where it is curiously cut. Each flower is subtended by a large, boat-shaped bract. The colour is yellow, veined and tinged with bright green, and margined with white. This species thrives along with C. longifolium. A native of Peru; introduced in 1876.

Gardeners' Chronicle, i. (1887), fig. 33.

C. Boxallii.—A handsome, free-flowering species, of recent introduction, related to C. villosum, which it resembles in foliage and in the form of its flowers. Leaves green, strap-shaped, 1ft. or more long. Scapes erect, one- or two-flowered; flowers large; dorsal sepal reflexed at the sides, greenish, with a white margin and numerous large purple spots; petals and pouch green-yellow, tinged with purple. The whole surface of the flower has a shining, varnished appearance. This species may be grown in an intermediate temperature. It blossoms in January and February. A native of Burmah; introduced in 1877.

Illustration Horticole, ser. iii., t. 345.

There are several named varieties of this, but the following is the only one deserving special mention:

Var. *atrata.*—Flowers very large; dorsal sepal green, with a white margin and large blotches of black-brown; petals and pouch reddish purple and pale green.

Gardeners' Chronicle, i. (1887), fig. 47.

C. caricinum.—A sedge-like species, the leaves springing in tufts from stout, creeping rhizomes; they are green, somewhat rigid, and about 1ft. long. Scape erect, bearing four to six flowers, which are medium-sized, pale green, with white margins to the sepals and petals; pouch bright green, with a row of black dots on the inner margin. This species may be grown in a moist greenhouse. Native of Peru; introduced in 1863. Syn. *C. Pearcei.*

Botanical Magazine, t. 5466.

C. caudatum.—One of the most graceful and attractive of Orchids, and one which has always excited much interest when in flower. It has rather stiff, bright green, strap-shaped, curved leaves, 1ft. long, and erect scapes, about 1½ft. high, springing from the centre of the growths. Strong plants have produced four flowers on each scape, but the usual number is three. Both dorsal and lower sepals are narrow, 6in. long, and curved forward; the petals are narrow and ribbon-like, pendent, ultimately becoming as much as 2ft. or even more long; they are yellow at the base, the rest being brown and purple; pouch 2in. long, reddish brown, yellow at the base, with red spots. The flowers are developed in April or May, and remain fresh for about a month. Native of Peru and New Grenada; introduced in 1847. For its cultivation this plant requires either warm greenhouse or stove treatment, some growers preferring the one, some the other, and we have seen it thrive under both methods. It requires plenty of moisture, and the soil about the roots should be kept sweet and open, the slightest sourness causing the roots to rot.

Warner's Select Orchids, ii., t. 1.

Var. *giganteum* has large, dark-coloured flowers.

Var. *Lindeni* is remarkable in the form of its lip, which, instead of being pouch-shaped, is long and ribbon-like, resembling the petals; it is also paler in colour. This is supposed to be an abnormal or monster form of the type. Syns. *C. Lindeni, Uropedium Lindeni.*

Regel's Gartenflora, x., t. 315.

Var. *roseum* has brighter-coloured flowers than the type, the rosy colour predominating.

Var. *Wallisii.*—A very remarkable variety, the flowers being large and distinct; sepals white, with green veins; petals 8in. long, rather broad near the base, the apex tinted with brown; the lip large, yellowish, spotted and veined with dull crimson, white at the mouth. Syn. *Selenipedium Wallisii.*

C. concolor.—A charming little plant, very similar to C. niveum. It has strap-shaped, fleshy, blunt-pointed leaves, about 4in. long, dark green, mottled with grey, on the upper surface, vinous purple on the under side. The scape is erect, short, one-, sometimes two-flowered; flowers 2in. across; the sepals and petals oval, almost similar in shape, concave; pouch small; the whole flower is coloured clear

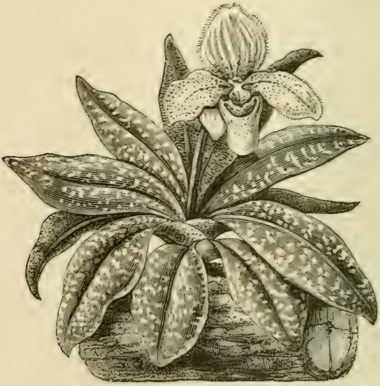


Fig. 42. Cypripedium concolor
(⅓ nat. size).

cream-yellow, with numerous small spots of cinnamon-red. The blossoms appear in autumn, and last over a month in perfection. The plants are small, and they grow slowly. They thrive best when potted in a mixture of peat and sphagnum in equal parts, with a sprinkling of silver sand. The pots should be drained with limestone. They should be placed near the roof-glass in a tropical house, and in a lighter position than is required by the majority of species. Native of Cochin China, &c.; introduced in 1864.

Fig. 42; Botanical Magazine, t. 5373.

Var. *Regnieri* has longer leaves, paler in colour, and scapes bearing three, sometimes five, flowers each.

Var. *sulphurinum.*—In this the leaves are green, and the flowers pure sulphur-yellow, without spots.

C. Curtisii.—A handsome species, related to C. superbiens. The leaves are strap-shaped, about 8in. long, light green, with darker mottlings. The scape is about 1ft. high, purplish, hairy; the flowers are large; dorsal sepal short, green, with a white margin, and purple and green nerves; lower sepals small; petals narrow, pointed, deflexed, dull green on the upper half, white below, veined and spotted with purple, hairy on the margins; pouch large, helmet-shaped, with acute side angles, vinous purple, with blackish veins. The blossoms appear in May and June, and last a long time. This species should be grown in a hot, moist house. Introduced from Sumatra in 1882.

Williams' Orchid Album, iii., t. 122.

C. Dayanum.—One of the prettiest of ornamental-leaved Orchids. It is dwarf and compact; the leaves are about 6in. long by 1½in. wide, and coloured yellowish green, marbled with olive-green. Scape stout, 1ft. high, one-flowered; flowers 4in. across; dorsal sepal large, white, with green veins; lower sepals similar but smaller; petals narrow, fringed with long, black hairs, deep purple, shaded with dull green; pouch large, deep purple, veined with green. The flowers last a long time, usually appearing in May or June. It will be seen that the flowers are large and dark-coloured, but the most attractive character is the variegation of the leaves. It is a native of Borneo, and was introduced in 1860. Syns. *C. Burbidgei*, *C. Petri.*

Flore des Serres, t. 1527.

C. Druryi.—A stout-leaved, dwarf plant, with leaves 9in. to 1ft. long, green, somewhat rigid. Scape about 9in. high, brown, hairy, one-flowered; dorsal sepal broad, curved forwards, hairy on the outside, dull yellow, the midrib marked with a broad, black-brown band; lower sepal similar, but smaller; the petals are broad, curved downwards, yellow, with a line down the middle, as in the sepal, warted at the base; pouch pale yellow, spotted inside with purple. The flowers are developed in March or April, and they last over a month. This is one of the most distinctly marked species, and a remarkably pretty one when well flowered. It is a shy-blossoming plant under cultivation. It requires tropical treatment. Native of Travancore; introduced in 1875.

Floral Magazine, ser. ii., t. 425.

C. Elliottianum.—A large and beautiful species, belonging to the group typified by C. Stonei. The leaves are bright green, 1ft. long, 1½in. broad, sometimes larger. Scape 1ft. long, bearing from two to five flowers; dorsal sepal 2½in. long, 1½in. wide, pointed, ivory-white, with dark crimson lines; lower sepal similar, but smaller; petals white, 5in. long, drooping, narrowed gradually to a point, white, with large, oblong spots and blotches of crimson, the edges wavy and fringed with hairs; pouch 1½in. long, in shape resembling that of C. Stonei; colour reddish brown. Introduced by Messrs. F. Sander and Co., in 1888, from the Philippine Islands. It will, no doubt, require the same treatment as its allies, C. Stonei and C. Rothschildianum.

C. Fairieanum.—This is one of the prettiest of all Cypripediums, the form as well as the colour of the flowers being exceptionally attractive. The leaves are 6in. long, 1in. wide, and bright green. The scape is slender, pale green, 6in. high; the flowers are produced singly, usually during the autumn months; the dorsal sepal is large and white, yellowish green at the base, beautifully streaked with brownish purple; petals similar in colour, fringed with black hairs, deflexed, and curiously curved at the ends; the pouch is dull purple, suffused

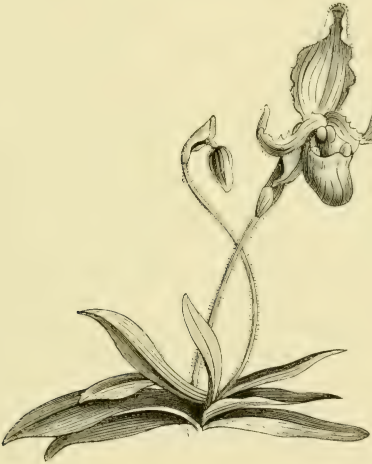


Fig. 43. Cypripedium Fairieanum
(much reduced).

with dull brown, and veined with green; the blossoms last six weeks in full beauty, if not sprinkled with water from the syringe. This plant seems to have become extinct in a wild state, as no new importations of it have been made, although it is one that is much sought after by cultivators. It is very rare in English collections, and, from its slowness of growth and impatience of division, is likely to remain so. It thrives best when placed in a warm, moist greenhouse, on a shelf near the glass, where it requires shade from sunshine. It is a native of Assam, and was introduced in 1857.

Fig. 43; Botanical Magazine, t. 5024.

C. Godefroyæ.—A delightful little plant, similar in habit and general characters to C. niveum, differing chiefly in the markings of its flowers. It has short, rather fleshy leaves, seldom over 5in. in length, the upper surface coloured in waves of light and dark green, the under side usually purple. Scapes 2in. to 4in. high, bearing one or two flowers; dorsal sepal almost round; petals oblong, deflexed, nearly as large as the sepal, all coloured creamy white, with large and small spots of brown-purple; pouch medium size, similarly coloured, but the spots are reduced to minute dots. This is greatly admired by everybody. Its flowers are developed in summer, and remain fresh a long time. Introduced from islands near Siam, in 1883. It requires the same treatment as C. concolor.

Botanical Magazine, t. 6876.

C. Haynaldianum.—A large-flowered, handsome species, related to C. Lowii. The leaves are 1ft. long, leathery, and green. The scapes are about 2ft. high, green, bearing two to six flowers; dorsal sepal oval, pale green, with blotches of brown at the base, rosy towards the apex; lower sepal large, green, with brown spots; petals oblong, 3in. in length, greenish yellow, the margins of the upper part rose-tinted, the lower part twisted, blotched with brown; pouch green, tinged with purple. This is not one of the easiest to cultivate. It requires a hot, moist atmosphere, with plenty of water at the root during summer; and care must be taken to keep the soil sweet and open. The flowers are developed in March. It is a native of the Philippine Islands, whence it was introduced in 1873.

Botanical Magazine, t. 6296.

C. hirsutissimum.—One of the most distinct and attractive kinds, flowering freely under ordinary treatment. It has green, strap-shaped leaves, about 9in. or 1ft. long, and scapes of the same length, bearing solitary flowers, which are very large, measuring at least 6in. across. The dorsal sepal is large, heart-shaped, reddish-purple, with a margin of clear green; lower sepal small, same colour; the back is densely covered with soft, blackish hairs; petals large, broad, tongue-shaped, twisted, hairy along the margins, narrowed and wavy at the base, deep purple and green; the pouch is large, helmet-shaped, deep green, shaded with purple. The flowers are produced freely in March or April, and they remain good on the plant for at least six weeks. This is one of the choicest of stove species. It is a native of Assam, &c., and was introduced in 1857.

Botanical Magazine, t. 4990.

C. Hookeræ.—This species deserves favour because of the beauty of its foliage alone, whilst the flowers are not wanting in interest. The leaves are 6in. long, broad and obtuse, deep black-green, beautifully variegated with irregular blotches of creamy yellow; the scapes are long, and one-flowered; the sepals and petals are yellowish brown, the points of the latter being of a rich rosy purple; the pouch is somewhat small, dark green, suffused with chocolate. It blossoms during the summer months, and is very easily cultivated. C. Hookeræ is a native of Borneo, whence it was introduced in 1862; it was named in compliment to the late Lady Hooker. Syn. *C. Bullenianum.*

Botanical Magazine, t. 5362.

C. insigne.—This is one of the best known of all exotic Orchids, and it is also one of the easiest to cultivate. It was introduced, along with C. venustum, many years before any other Cypripedium, and it still remains a useful and handsome garden plant. It may be cultivated in a greenhouse, along with Geraniums, or even in the window of an ordinary dwelling-room, where, with ordinary care, it will grow freely and flower annually. The leaves are about 9in. long, green; the scapes 1ft. high, bearing a single flower 4in. across, and shining as if varnished; dorsal sepal large, oval, the apex bent forward, apple-green, with dull purple spots, and a white margin; lower sepal small, pale green; petals broad, spreading, wavy, pale green, with purple longitudinal lines; lip green and brown, paler near the mouth. It blossoms in December and January, the flowers lasting fully a month. Native of Sylhet; introduced in 1820.

Fig. 44; Botanical Magazine, t. 3412.

There are no less than forty named varieties of this species, but not one-fourth of them are really distinct. The following are the best:

Var. *Chantini* has the dorsal sepal pure white on the apical half, and spots of a rich purple; petals with amber veins; and the pouch reddish-brown. Syn. var. *punctatum violaceum.*

Var. *Maulei* is large-flowered, has less white on the dorsal sepal, and the petals and pouch are paler, than in Chantini.

Var. *Sanderæ* has flowers wholly primrose-yellow save the apical margin of the dorsal sepal, which is white, with a few brown dots.

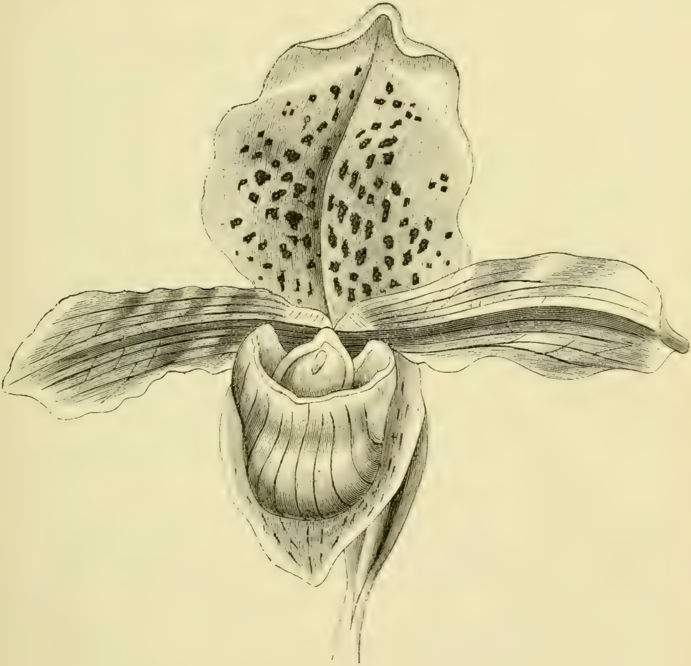


Fig. 44. Flower of Cypripedium insigne (nat. size).

Other distinct forms are: *albo-marginatum*, *Horsmanianum*, *Kimballianum*, and *Wioti*.

C. Lawrencianum.—A very handsome species, remarkable for its large, attractive flowers, as well as for its richly-variegated foliage. It is a robust grower, the leaves about 9in. long, 2in. broad, tessellated with yellow-green on a dark green ground, and very ornamental. Scapes 1ft. or more high, purple, hairy, usually one-flowered; dorsal sepal very large, spreading, white, with broad, parallel lines of brown-purple; petals spreading, 2½in. long by ½in. in width, green, tinged with purple at the apex, shaded with red at the base, the margins bearing a few purple, hairy warts; pouch large, almost cylindrical, purplish brown, yellowish at the base. The blossoms are developed in summer. This plant should be included in every stove collection of Orchids. It is a native of Borneo, and was introduced in 1878.

Botanical Magazine, t. 6432.

Var. *Hyeanum* differs in having the dorsal sepal white, with pale green lines; petals green, covered with short, dark hairs; and the pouch grass-green, with veins of a darker shade. It is considered to be a bleached or albino form of the type.

There are eight other named varieties of this, viz.: *albo-marginatum*, *atro-purpureum*, *biflorum*, *elegantissimum*, *magnificum*, *majus*, *superbum*, and *virescens*. The names are descriptive of the distinctive character of each.

C. longifolium.—A free-growing and stately plant, with long, strap-shaped, dark green, shining foliage, forming a large tuft. Scape erect, from 2ft. to 3ft. high, six- to ten-flowered, the flowers opening in slow succession, so that the plant is in blossom for about half the year; dorsal sepal pointed, thin, wavy, green, with faint reddish streaks; lower sepal large, boat-shaped, pale green; petals narrow, 4in. to 6in. long, twisted, green, margined with rose and white; pouch large, wide at the mouth, green and purple-brown. This is an easily-grown plant, but poor in floral colour. There seems to be very little difference between it and *C. Roëzlii.* Native of Central America; introduced in 1870. Syns. *C. Reichenbachianum*, *C. Hincksianum.*

Botanical Magazine, t. 5970.

C. Lowii.—This prettily-marked species has been a great favourite ever since its first introduction. The leaves are upwards of 1ft. long, about 2in. broad, and pale green in colour. The scapes are from 2ft. to 3ft. long, and produce from two to five flowers, a greater number being noticeable upon wild specimens. They are about 4in. across, variously shaded with green, yellow, purple, or violet, and are also spotted with black or deep purple; the petals are long, twisted once, broadest at the apex, fringed on the margins, green, spotted with purple, at the base, purple at the apex; the pouch is helmet-shaped, shining purplish green. The plant grows upon lofty trees in the thick jungles of Borneo and Sarawak, and was introduced in 1846.

Flore des Serres, t. 375.

C. niveum.—This is a gem amongst Cypripediums. The leaves are small, dark green on the upper side, irregularly blotched with grey, the under side being of a dull vinous red; the flowers are on erect scapes, from 3in. to 6in. high, solitary, or rarely produced in pairs, and pure, soft, snowy white, save for a few freckles of cinnamon irregularly scattered over the sepals and petals. The appearance of the plant, when not in flower, is very similar to that of C. concolor, the flowers of which are yellow. It blossoms during spring and summer, and remains in perfection about a month. It requires tropical treatment, and some broken limestone should be added to the peat and sphagnum used in potting. It is sometimes stated to be a native of

Moulmein, but this is an error: the plant is a native of the Straits of Malacca, and is brought to Moulmein by the coasting steamers in exchange for Moulmein Orchids; it has also been received from the west coast of Siam.

Botanical Magazine, t. 5922.

C. pardinum.—A handsome species, resembling C. venustum. The leaves are green, mottled with a darker shade, purplish beneath. Scape erect, about 9in. high, two- or three-flowered; flowers large; dorsal sepal broad, white, with emerald-green stripes; petals strap-shaped, pointed, pale green with dark purple warts at the base, reddish purple and fringed with hairs towards the apex; pouch large, pale yellow, veined with dark green. An easily-grown and free-flowering plant, requiring stove treatment. Introduced from Assam in 1869.

Floral Magazine, ser. ii., t. 51.

C. Parishii.—Although not to be reckoned amongst the most popular of Lady's Slippers, this is a really handsome plant. It somewhat resembles C. philippinense in general appearance, but is a more robust grower. The scape is sometimes as much as 2ft. in height, stout, hairy, sometimes branching, and it bears from three to six flowers; the sepals are broad, projecting forward, straw-coloured, with pale green veins; the petals are about 5in. long, undulated, green at the base, rich purple at the apex, and the margin bears purple, hairy warts; pouch long, green and purple. It blossoms in autumn, and requires tropical treatment. Introduced from Burmah in 1859.

Botanical Magazine, t. 5791.

C. philippinense.—This handsome species is related to C. Stonei. The leaves are strap-shaped, rather thick and fleshy, shining green, and about 1ft. long. The scape is erect, 1½ft. high, hairy, three- or four-flowered; flowers large; dorsal sepal broad, white, with purple stripes; lower sepal similar, but with green stripes, hairy externally; petals pendulous, 6in. long, narrow, spirally twisted, yellow at the base, green and white at the apex, the medial part covered with deep brown blotches and dark, glandular spots; pouch small, greenish yellow. The flowers are developed in April or May, and they last about a month. Introduced from the Philippines, where it was found growing with Vanda Batemani, in 1863. It requires tropical treatment. Syn. *C. lævigatum.*

Botanical Magazine, t. 5508.

C. præstans.—A striking and distinct plant, of recent introduction. It has stout, green leaves, like those of C. Stonei, and erect, many-flowered, hairy scapes; the dorsal sepal is 2in. long by 1¼in. in width, with the point arching forwards, whilst in colour it is creamy white, with about a dozen purplish stripes; the petals are 5in. long, narrow, twisted, with black, hairy spots on the edge near the base, ochre-coloured, with a mid-line of brown; pouch 2in. long, slipper-shaped, shining yellowish green, with red-brown nerves and blotches. It blossoms in August, and requires the same treatment as C. Stonei. Introduced from New Guinea in 1886. An older name for this species is *C. glanduliferum.*

Gardeners' Chronicle, 1887 (ii.), fig. 155.

C. purpuratum.—A pretty-leaved species, closely related to C. barbatum. Leaves 5in. long, pointed, pale green, marbled with a darker shade. Scape 6in. long, erect, one-flowered; flowers as in C. barbatum, but the dorsal sepal has revolute margins, and is pure white on the upper part, the rest being greenish, with purple stripes; the petals are broad, wavy, acute at the points, and ciliated, purplish, with black warts. This is an easily-grown and free-flowering plant, blossoming in the winter. It is a native of Hong Kong and China, and was introduced in 1836.

Botanical Magazine, t. 4901.

C. Rothschildianum.—This is one of the handsomest of the C. Stonei group. Prof. Reichenbach described it as being "one of the most astonishing introductions ever seen." It has stout, green, glossy leaves 2ft. long by 2½in. wide. Scape stout, 1ft. or more high, reddish, bearing three or more flowers, which are quite as large as those of C. præstans; dorsal sepal oblong, acute at the apex, yellowish, with black-purple stripes and a white margin; petals narrow, wavy at the base, yellowish green, with dark longitudinal lines and blotches; pouch as in C. Stonei, almost leathery in texture, cinnamon-coloured, reddish at the mouth. The staminode in this species is very remarkable; it is curved and formed not unlike a crane's beak and head. Introduced from New Guinea in 1888. It requires the same treatment as C. Stonei. Syn. *C. neoguineense.*

Reichenbachia, t. 61.

C. Sanderianum. — A most remarkable and beautiful species, which has lately been introduced from the Malay Archipelago by Mr. F. Sander, after whom it is named. In habit and leaf-characters it is similar to C. philippinense. Flower-scapes stout, erect, 1ft. or more high, black-purple and velvety, each bearing from one to four flowers, which are as large as those of C. philippinense; dorsal sepal triangular-concave, hairy outside, the front beautifully striped with brownish crimson on a pale green ground; the petals, which form the most striking feature in the flower, are curved back at the base, and thence extend spirally downwards, ultimately lengthening to from 1½ft. to 2ft., as in C. caudatum; in colour they are crimson and white on the upper part, brown-crimson below; pouch small, narrow, dark brown. The flowers last at least six weeks in perfection. This interesting Cypripedium is apparently easily grown if treated as a tropical plant. It does well when under the same conditions as suit C. Stonei. We have seen it in excellent health in the same house as Phalænopsis.

C. Schlimii.—A distinct and pretty species, suitable for cultivation in a greenhouse. The leaves are 6in. to 8in. long, thin and narrow, and light green. The scape is erect and branched, bearing six or more flowers, which are 2in. across; the sepals and petals are snow-white, tinged with green towards the ends, and mottled with purplish rose; the pouch is round, very much contracted at the mouth, white, with a blotch of deep rose in front. This plant should be grown in a mixture of peat, sphagnum, and sand, and be well drained; it should be kept moderately cool, and at all seasons of the year freely supplied with water, but during the growing season a copious supply must be given. It blossoms at various times of the year. It is interesting as being one of the progenitors of the many fine hybrids represented by C. Sedeni. It inhabits swampy places in New Granada, at an elevation of 4000ft. above the sea, where it was discovered by M. Schlim, a collector employed by M. Linden, about 1866.

Fig. 45; Botanical Magazine, t. 5614.

C. Spicerianum.—A beautiful and very distinct species, which has recently become one of the most popular of Orchids, although about five years ago 170 guineas was paid for a small plant of it. The leaves are like those of C. insigne, but broader and shorter, and spotted with purple on the under side. The scape is hairy, purple, 9in. long, generally one-flowered; flowers 2½in. across, full, of good substance; dorsal sepal 2in. wide, green, and folded at the base, the rest pure white, tinged with rosy violet,

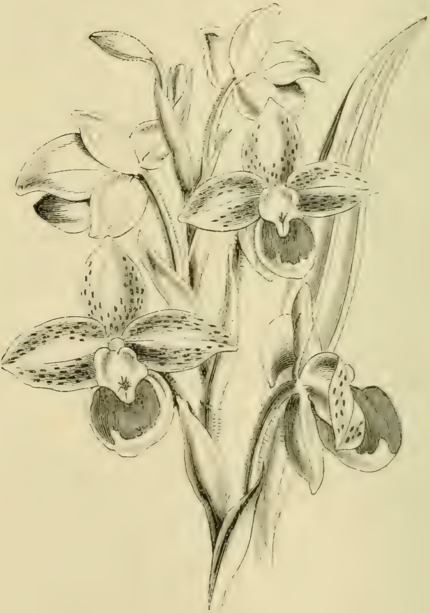


Fig. 45. Inflorescence and Leaf of Cypripedium Schlimii
(⅔ nat. size).

and having a stripe of purple from the apex to the base; lower sepal ovate, greenish; petals 2in. long, wavy along the margins, pale green, striped and spotted with purple; pouch large, open, dull purple; staminode large, disk-like, bright purple, with a white edge. This very desirable plant will grow and flower freely in an intermediate house, although it thrives perfectly in a stove. It blossoms from October to December, and the flowers last over a month. Native of Assam; introduced in 1878.

Botanical Magazine, t. 6490.

The following are named varieties: *giganteum*, *magnificum*, *nigrescens*, *radiatum*, *virescens*, *viride*. These names are sufficiently descriptive.

C. Stonei.—This is a truly beautiful species, and although somewhat difficult to establish when newly imported, under ordinary care it grows tolerably quickly, and forms a handsome specimen. The leaves are about 1ft. in length, leathery, obtuse at the ends, and dark shining green. The scape is about 2ft. long, erect, and usually three-flowered; the sepals are large and broad, of a china-white hue, thinly striped with reddish purple, and shaded with ochreous yellow; the petals are 5in. to 6in. long, narrow, curved downwards and twisted, and are of the same colour as the sepals; the lip is large, and has a curious pouch, somewhat resembling a Turkish slipper in form; the ground-colour is dull red, with purple veins, whitish on the under side. It is a native of Sarawak, in Borneo, and in its specific name commemorates Mr. Stone, formerly gardener to Mr. John Day, of Tottenham, who flowered it for the first time in this country in 1860. It blossoms in autumn, and requires tropical treatment.

Botanical Magazine, t. 5349.

Var. *platytænium*.—A plant of exceptional interest and beauty. The petals are 1in. broad, white, tinted with yellow and blotched with purple; dorsal sepal white, with purple stripes. The highest sum ever paid for an Orchid, viz., 310 guineas, was given for a small plant of this variety by Baron Schrœder, in 1887. It first appeared in the collection of the late Mr. John Day, in 1867.

C. superbiens.—This is undoubtedly the finest of the barbatum section, and deserves a place in every collection of orchidaceous plants. The leaves are 6in. long by 2in. broad, oblong and blunt at the apex, beautifully mottled with dark green upon a yellowish-green ground. The scape is 1ft. high, and bears a single very large flower; the dorsal sepal is large and broad, ciliated, white, beautifully streaked with purple and green; the petals are 3in. long and nearly 1in. broad, white, green, and purple, the margin warted, fringed with soft hairs; and the pouch is very large and prominent, of a uniform rich brown-purple, reticulated in front. It blossoms during summer, and lasts a long time in full beauty. It is a native of Java, and is regarded by some botanists as one of the many forms of C. barbatum. It was introduced in 1835. Syn. *C. Veitchianum.*

Flore des Serres, t. 1996.

C. venustum.—One of the first of the East Indian kinds to be introduced to English collections, having been brought home about the year 1819. It is a very accommodating plant, for whilst some keep it entirely in the stove, others grow it in a greenhouse, the latter being preferable, as the blossoms are produced in greater abundance, although the variegation of the foliage is more brilliant where the plants are grown in a warm-house. The leaves are short, of a dark bluish green above, curiously mottled and blotched with grey-green, whilst the under side is dull purple. The flowers are solitary, and of medium size; the sepals and petals greenish white or pink, striped with bright green; the latter are fringed and warted with purple, and the pouch is yellowish green, veined with olive-green and flushed with dull purple. It blossoms from January to

March, and lasts a long time in perfection. It is a native of Silhet and Nepal, and is perhaps as much valued for its handsomely-marked leaves as for its dark-coloured flowers.

Botanical Magazine, t. 2129.

Var. *pardinum* has larger foliage, which is also more distinctly marbled, and the flowers are clearer and brighter in colour.

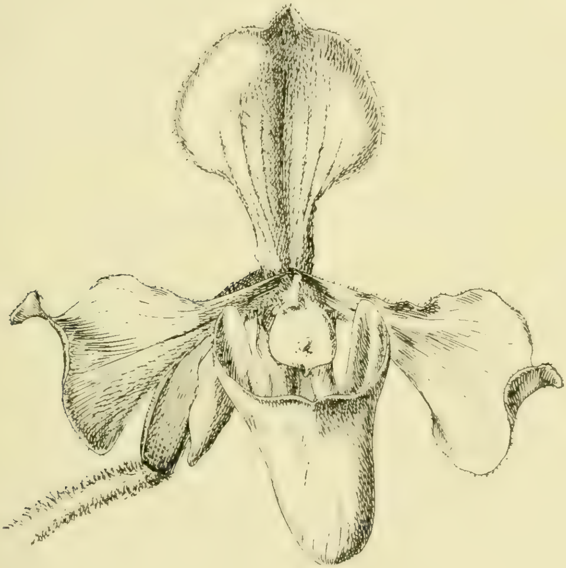


Fig. 46. Flower of Cypripedium villosum
(½ nat. size).

C. villosum.—A well-known and handsome species, of robust habit and strong constitution. The leaves are leathery, from 1ft. to 1½ft. long, bright green above, paler below, and spotted with purple at the base. Scapes 1ft. long, very hairy, one-flowered; flowers large; dorsal sepal erect, oval, folded back at the base, the margin fringed with hairs, brownish purple, the upper portion green, paling to white at the margin; lower sepal smaller, pale green; petals tongue-shaped, narrowed to a stalk at the base, 1in. wide in the broadest part, brownish yellow, with a purple midrib; pouch large, open, brownish yellow. The flowers are very freely produced from January to March, and remain fresh about a month. There are many variations from the type here described, some of the forms being considerably better than others. The varnish-like surface of the whole flower gives this species a very distinct appearance. Its nearest ally is C. Boxallii. It may be grown in an intermediate-house. Introduced from Moulmein in 1833.

Fig. 46; Illustration Horticole, iv. (1857), t. 126.

Hybrid Cypripediums.

No genus of Orchids has been so successfully manipulated by the hybridist as the Cypripediums. There are already at least a hundred named hybrids, and a great many more will soon be added to this number, several specialists having been engaged for some years in cross-breeding from the various kinds. Probably, the proportionately large number of hybrid Cypripediums is due to the fact of their crossing much more freely, and maturing seed better, than many Orchids do. Any beginner can cross-fertilise Cypripediums. Considerable patience and skill, however, are required to obtain flowering plants from the seeds. Usually, the period between the sowing of the seeds and the flowering of the plants which are obtained from them, is about five years.

There can be no doubt that a large proportion of the hybrid Cypripediums are of no value as flowering plants, many of them being positively ugly. And yet extremely high prices are paid for some of them; some peculiarity of form or colour—whether pretty or no does not in the least matter—coupled with the fact of the plants being unique or rare, being sufficient to cause Cypripedium fanciers to pay £50, £100, and even £300 for them. To anyone unacquainted with the Orchid market, this will appear incredulous. All hybrid Cypripediums do not fetch such fabulous prices; it is, however, certain that immense sums have been obtained for these plants in recent years.

In the following selection, we have included only those which can be recommended as good garden plants. Many of them are very expensive at present, but as they are, as a rule, easily and rapidly increased by division, they will, in a few years, be much more moderate in price. Following each are the names of the parents from which the hybrid was obtained. As hybrids are usually a combination of the characters of their parents, they do not require such minute description as the species.

C. albo-purpureum (from C. Schlimii and C. Dominianum).—A handsome, free-growing plant, with long, upright, reed-like foliage, and tall flower-spikes. Flowers as in C. Sedeni, but larger; dorsal and under sepals ivory-white, tinted with pink, with yellowish veins; petals 5in. long, drooping, twisted, pink-coloured; pouch dull crimson, the edge white, spotted with rose. An easily-managed plant, and one which is in flower several months in the year. Raised by Messrs. Veitch and Sons. First flowered in 1877.

Garden, xxi., p. 332.

C. Arthurianum (from C. insigne and C. Fairieanum).—A small plant, with the appearance of C. insigne. Flowers smaller; dorsal sepal pale green, white on the apical part, veined and spotted with crimson-purple; petals curved downwards, with fringed and wavy margins, green, with crimson veins; pouch greenish yellow, mottled and veined with brown. Raised by Messrs. Veitch and Sons. First flowered in 1874.

C. Ashburtoniæ (from C. barbatum and C. insigne).—Leaves as in C. insigne, and faintly marbled with grey. Flowers large; dorsal sepal as in C. barbatum; petals narrow, fringed, reddish brown, with purple veins; pouch pale purple, tinged with yellow. Raised in the gardens of Lady Ashburton, Melchet Court. First flowered in 1871. Syn. *E. obscurum.*

Gardeners' Chronicle, 1871, fig. 348.

There are several named varieties of this.

C. calophyllum (from C. barbatum and C. venustum).—Chiefly remarkable for the size and rich variegation of its leaves. Flowers with dorsal sepal as in C. barbatum, and petals and pouch as in C. venustum, but deeper in colour. Raised by Messrs. Veitch and Sons. First flowered in 1881.

C. calurum (from C. longifolium and C. Sedeni).—A tall, robust plant, with bright green foliage, and erect, branching, brownish flower-scapes, bearing large handsome flowers; dorsal and lower sepals whitish green, with rosy stripes; petals 2½in. long, green, with a white midrib and red edges at the base, wholly red on the apical half; pouch deep rose-pink. Raised by Messrs. Veitch and Sons. First flowered in 1881.

C. cardinale (from C. Sedeni and C. Schlimii).—Very like C. Sedeni, but the flowers are larger and brighter in colour, the petals broader and untwisted, and the pouch more contracted at the mouth. One of the best of the Sedeni group. Raised by Messrs. Veitch and Sons. First flowered in 1882.

Fig. 47.

C. Charles Canham (from C. villosum and C. superbiens). —An exceptionally fine hybrid, which flowered for the first time in 1887. Leaves as in C. superbiens. Flower very large, varnished; dorsal sepal 2in. across, whitish, with stripes of purple-brown, changing to green at the apex; petals light purple-brown, with yellowish veins and spots of dark purple; pouch $2\frac{1}{2}$in. long and $1\frac{1}{4}$in. across, pallid behind, purplish brown in front.

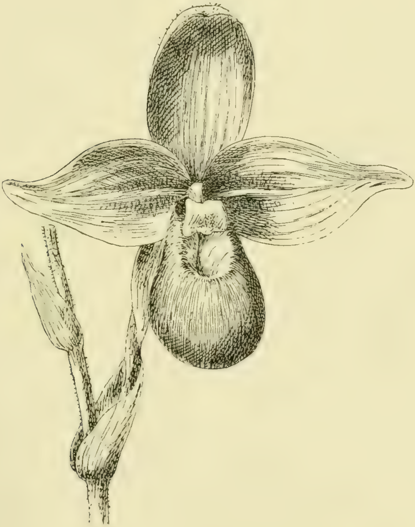


Fig. 47. Flower of Cypripedium cardinale
($\frac{2}{3}$ nat. size).

Var. *Mrs. Canham* has narrower leaves, the petals are unspotted, and the dorsal sepal has more purple in it. Origin not known.

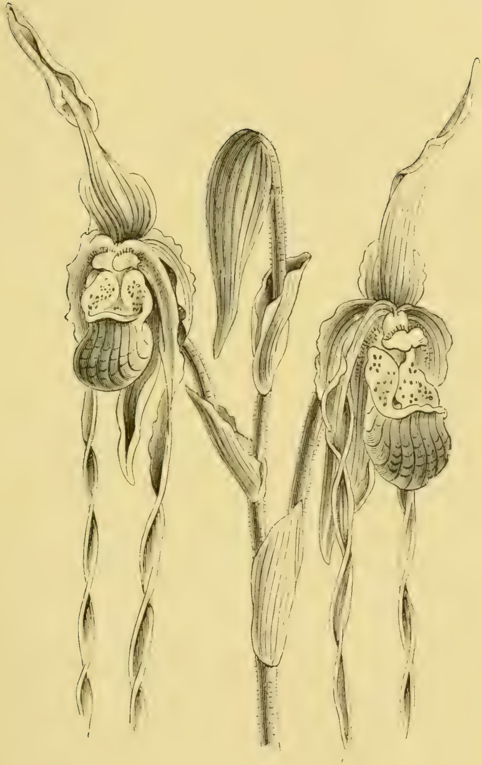
C. conchiferum (from C. caricinum and C. Roëzlii).—A free-growing plant, with tall, grassy green foliage, and erect, branching scapes. The flowers are pale green, shaded with yellow, the pouch having a few small spots of brown. This is one of the least attractive of the most commonly-grown hybrids. Raised by Mr. J. C. Browning, Windsor. First flowered in 1881.

C. Crossianum (from C. insigne and C. venustum).—A fine hybrid, having robust leaves, coloured light green, with olive-green blotches. The scape is hairy, purplish, one-flowered; dorsal sepal very large, whitish, with green lines and purple spots near the base; petals chocolate-coloured; pouch brown-yellow, with green veins. Although very dark in hue, yet this is a noble-looking plant when in flower. Raised in the gardens of Lady Ashburton, Melchet Court. First flowered in 1873.

C. Dominianum (from C. caricinum and C. caudatum).—A tall-growing plant, with long, arching, green leaves, and erect scapes bearing two or three flowers, in which the two sepals are 2in. long, whitish, with yellow veins; the petals 8in. long, narrow, spiral, pale yellow and rose, with green veins; pouch large, constricted, yellowish green, with brown veins, the mouth pale yellow, spotted with rose. Raised by Messrs. Veitch and Sons. First flowered in 1870.

Plate.

C. euryandrum (from C. Stonei and C. barbatum).—A stout plant, with deep green, faintly-mottled leaves, and erect, hairy scapes, bearing two or three flowers. Dorsal sepal short, broad, concave, white, shaded with crimson and striped with purple and green; petals 3in. long, narrowed from the broadish middle to a point, whitish, with large



INFLORESCENCE OF CYPRIPEDIUM DOMINIANUM

($\frac{1}{2}$ nat. size).

spots of purple and a fringe of hairs; pouch as in C. barbatum, but larger and brighter in colour.

Garden, xix., p. 636.

C. Godseffianum (from C. hirsutissimum and C. Boxallii). —One of the newest hybrids. Leaf 9in. by 2in., very stiff, green. Scape stout, hairy, reddish; flowers large; dorsal sepal sepia-brown on the central part, pale yellow about the margin; petals broad, rounded at the apex, wavy at the base; colour gorgeous purple-mauve on the upper half, the lower half sulphur-yellow, with blackish-red spots; pouch slender, light brown, yellowish underneath. Raised by Mr. N. C. Cookson, Wylam-on-Tyne. First flowered in 1888.

C. grande (from C. caudatum and C. longifolium).—A magnificent plant, hardly equalled by any other hybrid. The leaves are sword-shaped, from 2ft. to 2½ft. long, and 2in. broad, bright green. Scape as long as the leaves, many-flowered; flowers very large; sepals elongated, incurved, yellowish white, with green veins; petals drooping, ribbon-like, 1ft. or more long, cream-coloured at the base, the remainder rose-crimson; pouch very large, prominent, narrow at the mouth, where the colour is white, with rosy spots; the front is yellow and brown, fading to creamy white underneath. Raised by Messrs. Veitch and Sons. First flowered in 1883.

C. Harrisianum (from C. villosum and C. barbatum).— This is exactly intermediate between its parents. The leaves are green, with waves of a deeper shade. The flowers are larger than those of C. barbatum; dorsal sepal large, broad, shining, dark purple, white on the upper margin; petals purple; pouch vinous purple, shaded with green. A free-flowering, easily-grown plant, which succeeds in an intermediate temperature. It blossoms in May or June. Raised by Messrs. Veitch and Sons. First flowered in 1869. Interesting on account of its being the first artificially-raised hybrid Cypripedium.

There are over half-a-dozen named varieties of this, the names being descriptive of the special characters of each. They are *nigrum*, *rubrum*, *superbum*, *venustum*, &c.

C. Io (from C. Argus and C. Lawrencianum).—Leaves similar to those of the latter parent; flowers large; dorsal sepal ovate, white, with purple and green stripes; petals spreading, green at the base, purplish at the tips, the margins bearing brown, hairy warts; pouch green and purple, large. A distinct and handsome kind. Raised by Mr. N. C. Cookson, Wylam-on-Tyne. First flowered in 1886.

C. Leeanum (from C. insigne and C. Spicerianum).—Similar in habit and leaf-characters to C. Spicerianum. The flowers have a broad oval dorsal sepal, which is green at the base, the upper and greater part being pure white, with spots of mauve. The petals and pouch are as in C. insigne, save that the latter is shining red-brown. A good variety of this is a desirable plant, but there are many which are in no way superior to the ordinary C. insigne.

Var. *superbum* is the best form, raised by Messrs. Veitch and Sons, and Sir Trevor Lawrence, Bart. First flowered in 1885.

Fig. 48.

C. marmorophyllum (from C. Hookeræ and C. barbatum).—Foliage as in C. Hookeræ. Scape 1ft. or more high, purple, hairy, one-flowered; dorsal sepal large, broad, green and white, with dark green stripes, shaded with purple near the base; petals drooping, purple, bearded;

pouch dull purple, warty on the inflexed margin. Raised by Messrs. Veitch and Sons. First flowered in 1876.

C. Marshallianum (from C. pardinum and C. concolor).—A rare and very beautiful little plant, and one of the best of the hybrids raised by crossing C. concolor with others. It has the habit of C. concolor, but the leaves are broader, flatter, and greener. The flowers are 4in. across; dorsal sepal ovate, 1½in. across; petals oblong, rounded at the

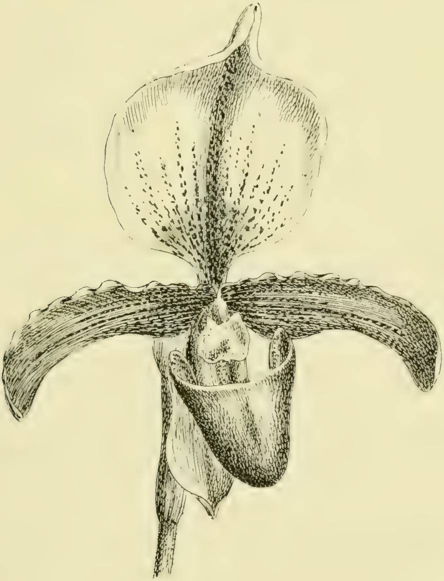


Fig. 48. Flower of Cypripedium Leeanum superbum
($\frac{2}{3}$ nat. size).

apex, 2in. long; pouch as large again as in C. concolor. The colour of the whole flower is cream-white and pale rose, with numerous small spots of dark crimson thickly scattered over the sepal and petals. Raised by Messrs. Veitch and Sons. First flowered in 1875.

C. Measuresianum (from C. villosum and C. venustum).—Leaves 6in. long, dark green above, purplish beneath. Flowers large; dorsal sepal yellow, white-margined, veined with brown; petals brown-purple, becoming yellowish with age; pouch large, orange, tinted and veined with purplish brown and green. A free-growing plant, which may be cultivated in a greenhouse temperature. Raiser's name not recorded. First flowered in 1888.

C. Meirax (from C. venustum and another).—A pretty little plant, having pointed, green leaves, with darker marbling, purplish beneath. Scape hairy, purple, single-flowered; dorsal sepal large, fringed at the base, white, tinted with rose and striped with green and purple; petals purplish crimson, with green basal nerves; pouch yellowish green and purple, with purplish veins. It flowers in winter, and remains in blossom about six weeks. Raised by Mr. R. Warner, Chelmsford. First flowered in 1880.

C. microchilum (from C. niveum and C. Druryi).—A charming little plant, with strap-shaped, recurved, green, mottled leaves. Habit and flowers the same as those of C. niveum; sepal and petals large, white, barred and spotted with purple; pouch very small, laterally compressed, white, with pale green veins. Raised by Messrs. Veitch and Sons. First flowered in 1882.

C. Morganiæ (from C. superbiens and C. Stonei).—This is a splendid hybrid, as the names of its parents would lead one to expect. It bears a most remarkable resemblance to C. Stonei var. platytænium, and is almost as rare. Foliage as in C. Stonei. Scapes tall, three-flowered; dorsal sepal rosy white, with deep red veins; petals broad, about 6in. long, pale sulphur-coloured, blotched with brown-purple on the inside; pouch as in C. superbiens, but longer, and coloured dull rose, with crimson veins, whitish in the throat. Raised by Messrs. Veitch and Sons. First flowered in 1880.

C. œnanthum (from C. Harrisianum and C. insigne Maulei).—Foliage dark green. Scape hairy, one-flowered; dorsal sepal large, green at the base, white above, lined with violet, the lower part blotched with purple; petals deflexed, vinous purple, yellowish and blotched at the base; pouch deep purple. Raised by Messrs. Veitch and Sons. First flowered in 1876 (the variety in 1885).

Var. *superbum* has larger, brighter-coloured flowers.

C. politum (from C. venustum and C. barbatum?).—A curiously-coloured plant, with robust, green foliage, chequered with a darker shade. Flowers medium in size; dorsal sepal whitish, spotted with purple and lined with green; petals linear, glossy, dull red, fringed with black hairs, green at the base, and warted; pouch narrow, purplish brown, with veins of a darker shade, the mouth green, spotted with purple. It blossoms in January or February. Raised by Mr. R. Warner, Chelmsford. First flowered in 1880.

Fig. 49.

C. Saundersianum (from C. caudatum and C. Schlimii).—A splendid hybrid, for the first plant of which £300 was paid. Foliage similar to that of C. Sedeni, which has been suggested as one of the parents. Flower as large as those of C. villosum; stalked ovary 5in. to 6in. long, velvety; dorsal sepal oblong-triangular, whitish, with purple and green stripes; petals broad strap-shaped, wavy, incurved-falcate, clear purple; pouch large, rounded in front, furrowed near the mouth, mauve-purple, whitish and spotted about the mouth, the front covered with asperities. As this hybrid is said to be free in both growth and flowers, it is sure to become a favourite. Professor Reichenbach considered it to be one of the finest. Raised by Mr. Marshall, of Enfield. First flowered in 1886.

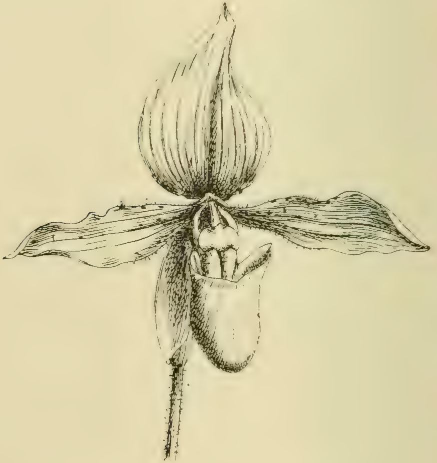
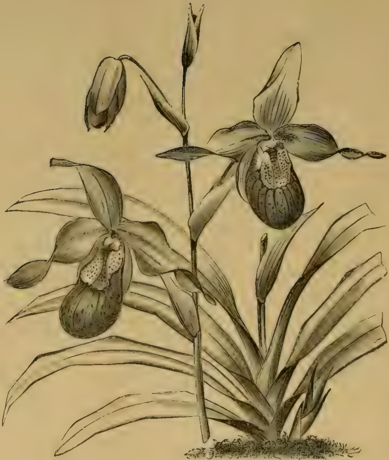


Fig. 49. Flower of Cypripedium politum
($\frac{2}{3}$ nat. size).

C. Schröderæ (from C. caudatum and C. Sedeni).—A very stately, handsome plant, with long, tufted, bright green leaves, and tall, branching scapes, each bearing several large, bright-coloured flowers; dorsal and lower sepals pale green and pink, veined with dark green; petals pendulous,



CYPRIPEDIUM SEDENI

(⅔ nat. size).

4in. long, twisted, pale green, stained with pink and veined with crimson; pouch large, in shape like that of C. caudatum, and coloured rose-pink, white inside, spotted with crimson. It blossoms in December, and continues to develop flowers for several months. Raised by Messrs. Veitch and Sons. First flowered in 1883.

C. Sedeni (from C. longifolium and C. Schlimii).—A free-flowering kind, and a popular garden plant. It has long, arching, green leaves, and tall scapes bearing many flowers, which open in slow succession, so that the plant is rarely out of blossom; dorsal and lower sepals whitish green, tinted with rose; petals narrow, twisted, deep rose, with whitish margins; pouch round, rich crimson, white and spotted about the mouth. Named after Mr. John Seden, the most successful of all hybridists, to whose skill we are indebted for the many beautiful hybrids distributed by Messrs. Veitch.

Plate.

Var. *candidulum* is a cross between C. longifolium and C. Schlimii var. album. It resembles C. Sedeni in everything except that the colour of the sepals and petals is white, and the pouch is deeper-coloured.

Var. *porphyreum.*—This is a robust variety, with larger and deeper-coloured flowers.

C. albanense is also a form of C. Sedeni.

C. selligerum (from C. philippinense and C. barbatum).—A beautiful hybrid, with very distinct characters. The leaves are large, broad, fleshy, deep green, with darker mottlings. Scape stout, erect, dark purple, hairy, two- or three-flowered; flowers large; dorsal sepal broad, white, green at the base, with dark crimson lines; petals curved downwards, 3in. long, ½in. broad at the base, hairy on the margins, dull red, veined with purple, and freely warted; pouch as in

C. barbatum, but paler. Raised by Messrs. Veitch and Sons, to whom we are indebted for the illustration. First flowered in 1878.

Plate.

Var. *majus* has larger and richer-coloured flowers than the type.

C. Swanianum (from C. Dayanum and C. barbatum).—This is one of the finest of the barbatum group of hybrids. Foliage as in C. Dayanum, but darker. Flowers as in C. barbatum, but larger; dorsal sepal white, lined and shaded with green and purple; petals broad, usually warted, dull red at the apex, brownish green at the base, with green nerves; pouch large, crimson-purple, warted on the mouth. The flowers last a long time in perfection. Raised in the gardens of Mr. W. Leech, Fallowfield. First flowered in 1876.

C. Tautzianum (from C. barbatum and C. niveum).—A pretty little hybrid, very similar to C. tessellatum-porphyreum. The habit is that of C. niveum. Dorsal sepal elliptical, pointed, white, with purple and green veins; petals spreading, ligulate, green at the base, purple-lined towards the apex, spotted with darker purple, and fringed with dark hairs; pouch as in C. barbatum, dark purple, paler underneath. Raised by Messrs. Veitch and Sons. First flowered in 1886.

C. tessellatum-porphyreum (from C. concolor and C. barbatum).—A beautiful plant, quite exceptional in colour. Foliage as in C. concolor, but larger. Scape two-flowered; "all the floral segments of a pale buff-yellow, much stained with rose-purple, the purple greatly predominating; veins of upper sepal deep vinous purple, those of the lower sepal plainer; veins of the petals with numerous blackish-purple spots towards the base; pouch deeper in colour in front than the other segments, pale green beneath, the mouth spotted with purple" (Veitch). Raised by Messrs. Veitch and Sons. First flowered in 1881.

C. vernixium (from C. Argus and C. villosum).—Leaves as in C. villosum, but less distinctly mottled. Scape stout, hairy, one-flowered. Flowers large, varnished; dorsal sepal pale green, with dark green nerves and black spots; petals wavy, bearded, dark brown; pouch olive-green, shaded with brown and conspicuously veined.

C. vexillarium (from C. Fairieanum and C. barbatum).—A charming hybrid, partaking much of the characters of its beautiful parent, C. Fairieanum. The leaves are pale green, blotched with a darker shade of the same colour, whilst the flowers combine the beauties of both parents in a marked degree. The sepal is white, tinged with pale green at the base, and streaked and shaded throughout with soft purple; the petals are deflexed, hairy, purple, slightly shaded with green; the pouch is pale brown, tinged with yellowish green, and veined with pale green. Raised by Messrs. Veitch and Sons. First flowered in 1870.

Garden, v., 103.

C. Williamsianum (from C. villosum and C. Harrisianum).—Leaves long, green, tessellated. Flowers very large; the dorsal sepal white, with a broad central line of brown and parallel green lines; petals somewhat as in C. villosum; pouch large, brown in front, yellowish behind, the margin ochre-coloured. Raised by Mr. R. Warner, Chelmsford. First flowered in 1882.

CHAPTER XXIX.

DENDROBIUM.

THIS genus has supplied a larger number of beautiful garden Orchids than any other among those which are natives of the Old World. Between 300 and 400 species are known, about 100 of which are cultivated in English collections, and amongst these are many Orchids which, for beauty of flowers, are unsurpassed in the whole Vegetable Kingdom. There is a great range of variation in the principal characters of the genus—size, habit, form of stem and leaf, shape and colour of flowers, all showing considerable diversity.

The pseudo-bulbs of Dendrobiums exhibit a wonderful range of form from a small, thin, wiry stem to a strong, woody pseudo-bulb as tall as a man, and as thick as one's wrist. Species with the habit and appearance of Epidendrums, Cattleyas, Cœlogynes, &c., are known. The Bamboo-like stem is most frequent among those in cultivation, others being club-shaped or ovate; they are always marked with ring-like scars, called joints, and they are either pendulous or erect. The foliage is strap-shaped or ovate, or sometimes very narrow and grass-like, and it is either deciduous or persistent till the pseudo-bulbs perish. The flowers are borne in lateral or terminal bunches, sometimes singly, sometimes in very large, pendent racemes; the sepals and petals are usually equal in length, the two lateral sepals being joined at the base, and forming a spur or chin; the lip is usually large and handsome, and is narrowed to a stalk-like base; the column is attached by its middle to the ovary, and there are four waxy pollinia.

The natural distribution of Dendrobium extends over an immense area, from the Himalayas, through Burmah, to the Malayan regions, Australia, New Zealand, China, and Japan. None have been found in Africa or in Madagascar. They are most abundant in Burmah and Moulmein, and from these two places the majority of the most beautiful of cultivated kinds have been obtained. As having an important bearing on the cultural requirements of Dendrobiums, a few observations on the climate of these regions may be worth attention. The wettest months are from June to September, at which time the atmosphere is almost constantly saturated. As much as 600in. of rain has been known to fall in these regions in one year, and 250in. in a month have been recorded (Hooker). The average day temperature at this season is from 80deg. to 90deg. in the shade, falling to about 70deg. at night. From October to February little or no rain falls, and the atmosphere is, therefore, very dry; the temperature also is lower. This is the resting season for vegetation, the Dendrobiums, at this time, being dried almost to scorching, and shrivelled to half their size. In the Malayan and Philippine regions, the climate is almost equal all the year round. The air is nearly always saturated, and the average temperature in the shade is 90deg. by day, seldom falling below 75deg. at night. During the wettest months there is sunshine for several hours almost every day, and in the driest season there are occasional showers. From these facts we obtain some data which will enable us to regulate the treatment for Dendrobiums, so as to accord in a measure with what they get in a state of nature.

Culture.—All the species grow upon trees or rocks in positions exposed to sunshine, so that under cultivation they require very little shading. For the tropical species the temperatures most suitable are as follow:

MONTHS.	NIGHT.	DAY.
	deg.	deg.
November to February	55	60-65
March to April	60-65	70-80 (with sun)
May to August	65-70	75-85 ,,
September and October ...	60-65	70-80 ,,

During the growing season the atmosphere should be kept saturated by frequently damping the paths, stages, &c.; and in very hot weather the plants may be dewed with a fine syringe in the morning at ten o'clock, and in the afternoon at about five o'clock. As the new pseudobulbs ripen, less water should be given; and when they are plump and full, the plants should be removed to a drier, airier house, and only sufficient water be given at the roots to prevent shrivelling. In winter, no water should be given to the deciduous species, but those with foliage upon them should be watered a little.

The plants should be re-potted as soon as the new growth begins to push. Pots, pans, baskets, rafts, and blocks are used, the first two for such strong sorts as D. chrysanthum, D. chrysotoxum, D. fimbriatum, D. speciosum, &c.; baskets are preferred for the smaller and more delicate kinds, and rafts and blocks for those which do not like to have their roots confined. Grand specimens have been grown on blocks with a little sphagnum moss about the roots; but to do this the plants must be kept in a constantly-saturated atmosphere and a high growing temperature. Those which thrive in pots or pans should be planted in a compost of good fibrous peat and sphagnum, with a little sand or crock-dust, or some nodules of charcoal, added, to keep the mixture porous. Two-thirds of the pot should be filled with clean drainage, and the mixture should be pressed in firmly about the roots. In every case, when re-potting is done, the plants should be made to stand firmly in the pots by means of stakes, as those which are loose in the soil do not get established nearly so quickly as those which are firm.

When the plants are to be grown in baskets, these should be of teak, and of the shape that is usually employed for Orchids; the bottom of the basket should be covered with crocks and charcoal, and, after adding the soil, the plant must be tied into the basket if necessary. This is done by passing matting or string a few times over the soil and under the basket. Plants for blocks must be securely wired on to the face of the block, and a little sphagnum must be fastened about the roots. In every case, the growing end of the rhizome of the plants must be kept above the surface of the soil or moss. New roots should be encouraged to enter the soil by adding tufts of sphagnum wherever they show on the growths above the soil.

There are other important points to be observed in the management of different species of Dendrobium, but these are mentioned under the description of each kind.

Both yellow and green aphides sometimes attack the young growths of Dendrobiums, and thrips are frequently found on both young and old foliage. Fumigation, or dipping in a mixture of tobacco and soft soap, will destroy these pests. Snails are also very fond of the young growths of these plants; they must be kept under by setting traps, as already advised (page 12), or by examining the plants at night, when the snails come out to feed.

Pruning has been recommended by several successful growers of Dendrobiums. By this is meant the removal of all the old pseudo-bulbs, leaving only those that have not yet flowered. Some leave all the pseudo-bulbs that are three years old and under. The latter plan is certainly the safer, and it may be adopted for most of the free-growing kinds with advantage. At the same time, it is well to bear in mind that some of the finest Dendrobiums ever seen have been grown without the removal of a single pseudo-bulb from the commencement.

Propagation.—Those kinds which have jointed, bamboo-like pseudo-bulbs are readily multiplied by removing the ripe pseudo-bulbs from an old plant, cutting them into lengths of 6in. or so, and fastening them on to pans or baskets of moist sphagnum moss. Under this treatment, the pieces soon push eyes, and these, when rooted, may be removed and planted separately, leaving the stem till it has exhausted itself. Such species as D. bigibbum, D. crassinode, D. fimbriatum, D. nobile, D. Phalænopsis, and D. Wardianum, are easily propagated in this way.

D. aggregatum.—A dwarf-growing species, which should be fastened upon a bare block of wood, green elm or thorn being best; it does not exceed 3in. or 4in. in height. The pseudo-bulbs, each of which bears a solitary leaf, are crowded, angular, 2in. long, and deep green. The flowers are clear yellow, becoming deeper with age, the lip dark yellow in front; they are borne in arching racemes about 6in. long. This species blossoms during March, April, and May. It is a native of Burmah, and first flowered in England in 1834.

Botanical Magazine, t. 3643.

The best variety is that known as *majus*.

D. albo-sanguineum.—A short, sturdy species, with stems ½in. in diameter, and less than 1ft. high. Leaves lance-shaped, 6in. long. The flowers, which grow two or three together, appear in May; they are very large (about 4in. across), and of a soft creamy white; the petals, which are twice as broad as the sepals, have a few blood-red streaks at the base; and the labellum has two large blotches of reddish crimson in the middle. The flowers are sometimes borne on one-year-, sometimes on two-year-, old stems. This plant should be grown upon a block of wood or in a basket, and during the growing season requires stove heat and a thoroughly moist atmosphere. It is a native of the open hill forests of Moulmein.

Botanical Magazine, t. 5130.

D. amœnum.—A slender-growing plant. Pseudo-bulbs about 1ft. long, with short internodes. Leaves narrow, 3in. long, deciduous. Flowers 2in. across, produced singly (sometimes two or three together) on the upper part of the ripened leafless growths; sepals and petals equal, white, tipped with amethyst; lip broad, notched at the margin, hairy in the throat, coloured amethyst, with a white edge and a yellow blotch in front. It blossoms in May, and is remarkable for its delicious violet-like odour. It requires the same treatment as D. nobile. Native of Nepal; introduced in 1874.

Botanical Magazine, t. 6199.

D. aureum.—A most charming Orchid, and very easy to manage. The pseudo-bulbs are from 1ft. to 1½ft. high, smooth, plump, as thick as the thumb in the upper half-yellowish when old; leaves lance-shaped, 4in. long, deciduous. Flowers in twos or threes from the nodes of the two-year-old stems, each one 2in. across; sepals and petals nearly equal, cream-colour; lip large, channelled, reflexed, velvety above, buff-yellow, streaked with dull red; column orange-red. The flowers are developed in January or February, and remain fresh about a fortnight; they change to a deep golden yellow before perishing; they are also remarkable for their strong primrose fragrance. This plant should be grown in a hot, moist house from April to September, when it should be placed in a cooler house, and be allowed to ripen. During winter it should hang close to the glass in a sunny place, and be kept dry. It thrives best when planted in baskets, using for it a mixture of peat and sphagnum. Native of various parts of India; introduced in 1837. Syn. *D. heterocarpum.*

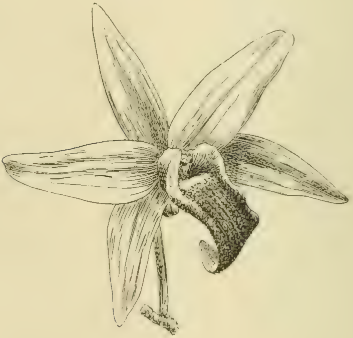


Fig. 50. Flower of Dendrobium aureum
(⅔ nat. size).

Fig. 50; Botanical Magazine, t. 4708.

Var. *Henshalli.*—Pseudo-bulbs longer. Lip white, with a yellow blotch and two reddish spots.

Botanical Magazine, t. 4970.

Var. *philippinense.*—Pseudo-bulbs almost pendent, from 3ft. to 5ft. long. Flowers paler, and the segments more acute, than in the type.

D. Bensoniæ.—A handsome species, erect in habit, the pseudo-bulbs from 1ft. to 2ft. high, terete, as thick as the finger, yellowish when mature. Leaves about 2in. long, deciduous. Its lovely flowers, which are about 2½in. across, are produced in May and June, growing in twos or threes on the upper part of the stem; the sepals and petals are milk-white; the lip is white, with an orange centre, and ornamented near the base with two large, velvety-black blotches. This species is a native of Moulmein, whence it was introduced to our gardens in 1866, by Lieut.-Col. Benson. It is not easily kept in health after about two years' cultivation. It should be planted in a pot or basket, in peat-fibre and sphagnum, and be grown in a hothouse; when growth is finished, the plants should be placed in an intermediate temperature, and be kept dry.

Botanical Magazine, t. 5679.

D. bigibbum.—A sturdy species, with fusiform pseudo-bulbs, 1ft. to 2ft. high, and bearing about half-a-dozen lance-shaped leaves 4in. long. Flower-spikes from near the apex of the two-year-old pseudo-bulbs, erect, about 1ft. long, bearing from four to twelve or more flowers, each of which is 1½in. across, full; the sepals oblong; the petals broader than long, magenta-purple; lip funnel-shaped, with a tongue-like front lobe, deep maroon, with a raised, white crest. The spur is two-lobed or double-chinned, whence the specific name. The blossoms appear late in the autumn. Native of tropical Australia; introduced in

1824. When growing, this species requires the hottest and moistest atmosphere, with plenty of light. It should be placed in a drier position whilst ripening its growths. Either pot- or basket-culture suits it As the new growths push in the winter, care must be taken not to let them get a check.

Botanical Magazine, t. 4898.

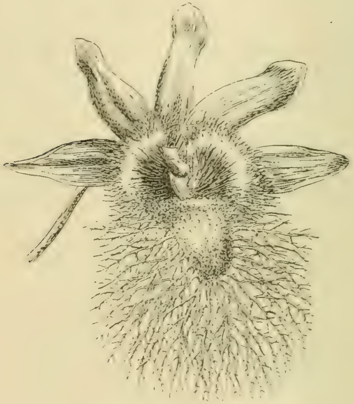


Fig. 51. Flower of Dendrobium Brymerianum
(nat. size).

D. Brymerianum.—One of the most remarkable of all Orchids. Pseudo-bulbs erect, as thick as a pencil, slightly swollen in the middle, 1ft. or more long, yellowish. Leaves lance-shaped, 4in. long, persistent. Flowers in racemes from the top of the pseudo-bulbs, one to three in each raceme; sepals and petals equal, 1in. long, spreading; lip sometimes 3in. long by 1½in. broad, the greater part of it cut up into long, branching, interlacing filaments, forming a deep fringe to the central part, which is heart-shaped and downy on the surface. The whole flower is a beautiful golden-yellow colour. Native of Burmah; introduced in 1874. For its cultivation, the plant requires the same treatment as recommended for D. aureum. It blossoms in February or March.

Fig. 51; Botanical Magazine, t. 6383.

Var. *histrionicum* has much shorter pseudo-bulbs, smaller flowers, and little or no fringe.

D. chrysanthum.—A handsome, large-growing kind, the pseudo-bulbs often attaining a length of 5ft. or 6ft., semi-erect, somewhat twisted, as thick as the little finger. Leaves lance-shaped, 4in. long, deciduous. Flowers on the young leafy pseudo-bulbs, in axillary racemes, usually four to six flowers on each; these are 1½in. across, waxy in texture, full, bright orange-yellow; the lip is rounded and fringed. It blossoms in the autumn. This species is most satisfactory when grown in teak baskets hung near the roof-glass, growth being allowed to hang downwards. It likes abundance of water when growing, new growth commencing as soon as the flowers fade, and continuing all winter, when the temperature for it should not fall below 60deg. When at rest, the soil at the roots should not be allowed to get dry. It may be termed a warm greenhouse plant. Native of Upper Burmah, &c.; introduced in 1828. Syn. *D. Paxtoni.*

Botanical Register, t. 1299.

D. chrysotoxum.—A richly-coloured and first-rate flowering Orchid. Pseudo-bulbs club-shaped or spindle-shaped, furrowed, 6in. to 12in. long, bearing four apical leaves, each about 4in. in length, leathery. Racemes produced from near the top of the last-ripened pseudo-bulbs, each raceme 8in. long, arching, and many-flowered; flowers

2in. across, spreading; sepals and petals nearly equal, rich golden yellow; lip the same colour, deeper in front, and streaked with red in the throat, margin fringed, upper surface pubescent. The blossoms are developed in March and April. This species requires the same treatment as D. densiflorum. It is a native of Burmah, whence it was introduced in 1847.

Botanical Magazine, t. 5053.

Var. *suavissimum* has stouter pseudo-bulbs and broader leaves than the type; the flowers, too, which appear in June, have a large, maroon blotch on the lip, and are sweet-scented.

D. crassinode.—A beautiful and structurally interesting species. It has pendulous pseudo-bulbs, from 1ft. to 2ft. long, formed throughout of swollen internodes in the form of depressed spheres, 1in. in diameter, and less than that apart. Leaves narrow, 4in. long, deciduous. Flowers in twos and threes from the upper nodes of the last-ripened pseudo-bulbs, each one 2½in. across; sepals and petals equal, oblong, pointed, white, with a blotch of amethyst at the tip; lip spreading, kidney-shaped, 1in. across, slightly fringed, hairy on the upper surface, yellow, zoned with white, amethyst at the apex. Introduced from Moulmein in 1868. It blossoms from January to March, lasting several weeks in beauty. The cultural requirements of this are exactly the same as those of D. Wardianum, to which it is closely allied.

Botanical Magazine, t. 5766.

Var. *Barberianum* has flowers with much more purple colour in them than in the type.

There is a natural hybrid between *D. crassinode* and *D. Wardianum*, having characters intermediate between the two parents.

D. crepidatum.—A pretty and free-flowering plant, with pseudo-bulbs 1ft. long, ½in. in diameter, striped with white. Leaves narrow, 3in. long, deciduous. Flowers from the nodes of the youngest-ripened pseudo-bulbs, usually in pairs or threes, on purple stalks, waxy, 1½in. across, white, with tints of lilac; lip heart-shaped, pursed, and blotched with yellow in the throat. Native of Assam; introduced in 1849. It requires the same treatment as D. aureum, and blossoms in early spring.

Botanical Magazine, t. 4993.

D. crystallinum.—A graceful and pretty species, very free-flowering, and easy to manage. The pseudo-bulbs are tufted, about 1ft. long, as thick as a goose-quill, striated. Leaves narrow, 4in. long, deciduous. Flowers in pairs or threes from the nodes of the last-ripened pseudo-bulbs, each flower 1½in. across, delicate in texture, white, tipped with amethyst; lip rounded, yellow, with a white border and a blotch of amethyst in front. Native of Burmah; introduced in 1867. A well-grown specimen of this is exceedingly beautiful. It thrives when treated as advised for D. aureum.

Botanical Magazine, t. 6319.

D. Dalhousieanum.—This is a noble plant, requiring considerable space if it is to be grown in anything like perfection, as it attains a height of 3ft. to 4ft. The stout, erect pseudo-bulbs are veined with purplish crimson in a young state; they become hard and woody with age, and they usually continue to produce flowers for several years in succession. The leaves are lance-shaped, broad, from 4in. to 6in. long. The flower-spikes, which are sometimes in pairs, are produced near the apex of the leafless pseudo-bulbs, each raceme bearing from three to ten flowers; these are very large (from 3in. to 5in. across);

the sepals and petals are pale nankeen-yellow, tinged with rose; the large, downy lip is of the same colour, marked at the base with two large blotches of dark crimson, and margined with rosy pink. We have seen glorious specimens of this plant exhibited bearing upwards of a hundred of its splendid blooms. It requires tropical treatment and abundance of water whilst making new growth; afterwards it should be kept dry till the flowers appear. It thrives best in baskets, and usually blossoms in April and May. Introduced from India in 1837. It was named by Dr. Wallich in honour of the late Countess Dalhousie, from whom he first received it.

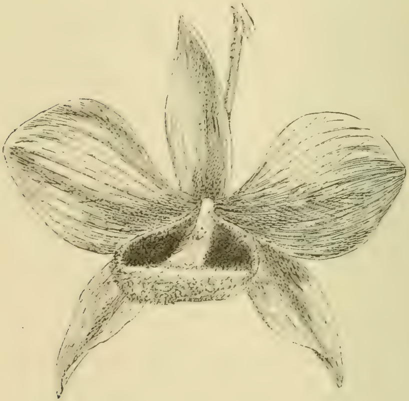


Fig. 52. Flower of Dendrobium Dalhousieanum
($\frac{2}{3}$ nat. size).

Fig. 52; Botanical Register, 1846, t. 10.

D. Dearei.—A stout, erect-growing plant, the stems 2ft. to 3ft. long, the upper part leafy. Leaves 2in. long. Flower-spikes from the top of the pseudo-bulbs, five to seven flowers in each; sepals narrow; petals oval; lip oblong. The whole flower measures nearly 2½in. across; colour white, with a pale yellowish-green blotch in the throat. This free-flowering, handsome species was introduced from the Philippines in 1882, and has already become a popular Orchid. It requires a position in the hottest house whilst growing, and it must have abundance of moisture, except when ripening its growth, which may be done in a sunny intermediate-house. It thrives best when planted in pots. The blossoms are developed in July or August.

Williams' Orchid Album, iii., t. 120.

D. densiflorum.—This is a charming, erect-growing, evergreen, and very distinct plant. Its pseudo-bulbs are somewhat club-shaped, four-angled, and about 1ft. in height, furnished near the apex with several broad, oblong, shining leaves, about 4in. in length. The flowers are 2in. across, rich orange-yellow in colour, and are produced in numerous long, dense, pendulous racemes, which last about a week in perfection. The lip is of a deeper hue than the other portions of the flower, and is densely covered with soft, downy hairs. This species should be grown in a pot. When the young shoots are pushing up, it likes tropical heat and a liberal supply of water; but when the growths have reached maturity, remove the plant to a warm greenhouse for the winter, only supplying it with sufficient moisture to keep the bulbs from shrivelling, until the flower-spikes begin to push out, when more water should be given, to enable it to fully develop its blooms. Under this treatment the plant should be in full beauty in April or the beginning of May; if it is desired to have it in flower earlier, remove it from the greenhouse to the warm-house in January, and gradually supply more water. It is very easily managed, and from its great beauty should form one of even the smallest collection. It is plentiful in Burmah and other parts of India, and has been in cultivation since 1830.

Botanical Magazine, t. 3418.

Var. *Schrœderi.*—This has longer and looser racemes, with larger flowers; the sepals and petals are French white, the lip deep orange. It is sometimes called *densiflorum album.*

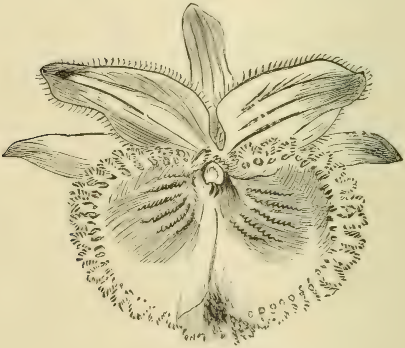


Fig. 53. Flower of Dendrobium Devonianum
(nat. size).

D. Devonianum.—This has been called the "King of Dendrobiums"; and it is so beautiful and elegant that we cannot object to the title. It is of a pendulous habit; the stems are 3ft. or more long, and slender, bearing blossoms for about half their length. The leaves are narrow, 3in. long, deciduous, falling away before the blossoms are produced, usually in May or June. The flowers are 2in. across; the sepals and petals are soft creamy white, tinged with pink, the latter being tipped with bright purple; the lip is heart-shaped, white, margined with purple, with a rich orange blotch at the base, and bordered all round with a delicate lace-like frilling. This plant should be grown in a basket, or attached to a block. It requires a high temperature and plenty of moisture whilst making growth; during winter it wants very little water, and a temperature of about 55deg. at night. D. Devonianum is named in honour of the sixth Duke of Devonshire, in whose gardens at Chatsworth it was first flowered in 1837. It was introduced from the Khasia Hills.

Fig. 53; Botanical Magazine, t. 4429.

D. Draconis.—A white-flowered, handsome species, with erect pseudo-bulbs about 1ft. high, and as thick as the little finger, rounded, covered with short, black hairs. Leaves lance-shaped, 3in. long, remaining on for two years. Flowers in compact heads from the uppermost joints, each 2in. across; sepals and petals lance-shaped and pointed, pure white; lip tongue-shaped in front, crisp-edged, three ridges in the throat, white, with orange-red stripes at the base. Flowering season, May and June. This is a free-flowering plant, the blossoms lasting a long time. It thrives under the same treatment as D. aureum. Introduced from Moulmein in 1862. Syn. *D. eburneum.*

Botanical Magazine, t. 5459.

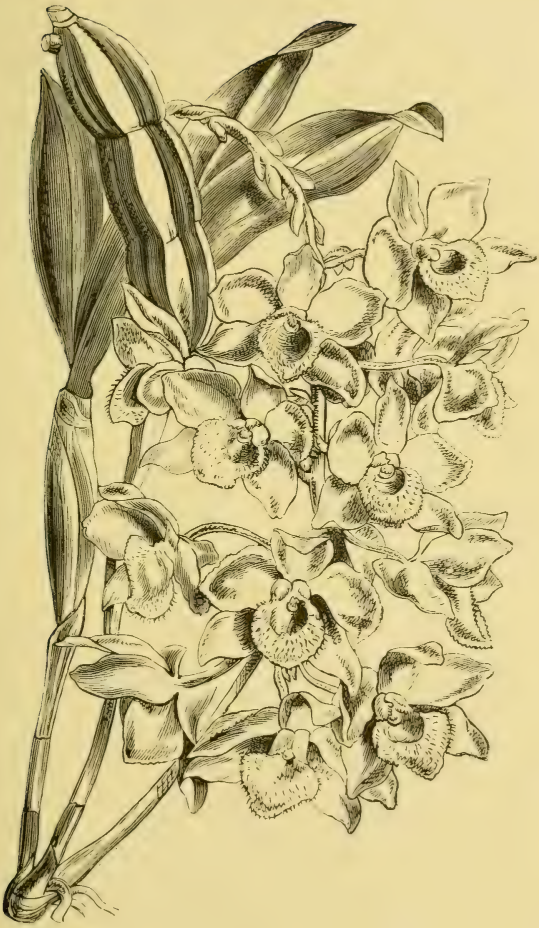
D. Falconeri.—One of the most beautiful of all Dendrobiums. Pseudo-bulbs thin and quill-like, or short and knotted, branching freely, and covered with grass-like leaves 3in. long. Flowers produced singly from the nodes of the last-ripened growths, each about 3in. across, full;

sepals oblong, white, with a rosy tinge; petals broader, white, tipped with amethyst; lip large, spreading in front, funnelled behind, and coloured rich maroon, with an orange blotch on each side, and a zone of white in front, the tip being rich amethyst. It blossoms in May and June, the flowers lasting about a fortnight. This popular Orchid is easily procured, being imported in large quantities annually. It thrives best when grown on blocks or in shallow baskets, or a piece of soft fern stem may be used as a block. Whilst growing, it requires plenty of water, with a high stove temperature, and from April to September it should be syringed overhead at least once a day. In October it should be removed to a cooler house, and kept on the dry side, but not parched, till it pushes its flower-buds. Native of Assam, Bhotan, &c.; introduced in 1856.

Botanical Magazine, t. 4944

D. Farmeri.—A compact, evergreen, upright-growing plant, with pseudo-bulbs from 1ft. to 1½ft. high, narrow at the base, thickened above, four-angled, and bearing several shining dark green leaves 6in. long towards the top. The flowers are produced in May, upon long, pendulous racemes, in the same manner as those of D. densiflorum, but not so closely set together—they are 2in. across; the sepals and petals are pale straw-colour, delicately tinged with pink, the disk of the lip being golden yellow, and the upper surface downy. It is a very beautiful and delicate species, and lasts some ten or twelve days in full perfection; the flowers are produced at the same time as the leaves, a desirable quality which is somewhat uncommon in the genus. It is a native of Moulmein and Khasia, and was introduced in 1847. It requires the same treatment as D. densiflorum.

Plate; Botanical Magazine, t. 4659.



DENDROBIUM FARMERI

($\frac{2}{3}$ nat. size).

Var. *albiflorum* has white sepals and petals, and a yellow lip.

Var. *aureoflavum* is distinguished from the type by its bright yellow sepals and petals, and golden lip.

Botanical Magazine, t. 5451.

D. fimbriatum.—This plant is extremely beautiful, and is considered one of the very best of the Dendrobiums. It attains a height of from 2ft. to 5ft.; the pseudo-bulbs are stout and woody, the upper half furnished, when young, with green leaves about 6in. long. The racemes are pendulous from the top of the ripened stems, each bearing from six to twelve blossoms; the flowers are from 2in. to 3in. across, of a thin and delicate texture throughout, and deep, rich orange in colour, the margin of the rounded lip being beautifully bordered with a golden, moss-like fringe. It requires the same treatment as D. Dalhousieanum, and blossoms during the months of March and April, the same stems producing flowers for several seasons in succession. A specimen bearing 123 racemes and 1216 flowers has been grown in England. D. fimbriatum is a native of Northern India, whence it was introduced in 1822.

Paxton's Magazine of Botany, ii., 172.

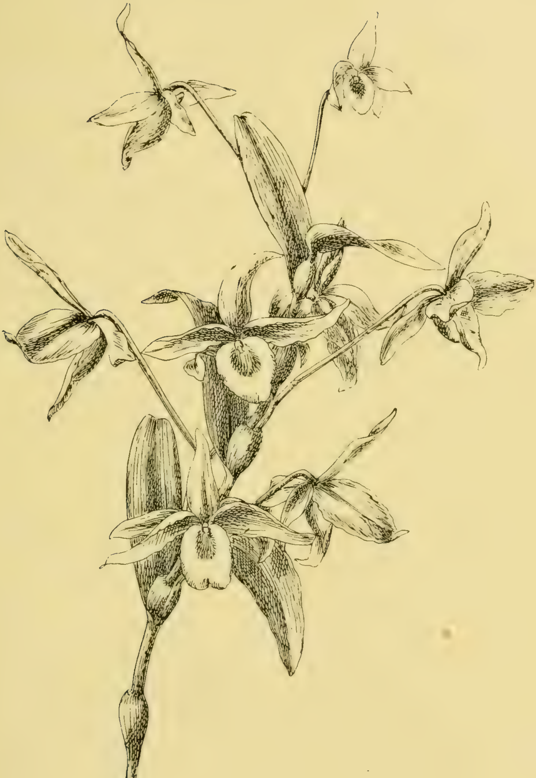
Var. *oculatum* differs from the type in having the flowers blotched in the centre with deep maroon-purple. It is sometimes cultivated under the erroneous name of *D. Paxtoni.*

Coloured Plate; Botanical Magazine, t. 4160.

D. Findlayanum.—A very distinct plant, its pseudo-bulbs being shining yellow, 1½ft. long, flexuous, knotted at the nodes, the internodes narrow. Leaves lance-shaped, 3in. long, deciduous. Flowers on the last-ripened, leafless pseudo-bulbs, near the top, usually in pairs, on longish stalks; sepals and petals overlapping, of a soft lavender colour; lip spreading, heart-shaped, yellow, margined with white. The flower of a good variety measures 3in. across. Introduced from Burmah in 1877. This species thrives when treated as advised for D. nobile, producing its delicately-tinted blossoms in January or February. It is frequently introduced in large quantities.

Plate; Botanical Magazine, t. 6438.

D. formosum.—The largest-flowered among the white kinds. It has stout, erect pseudo-bulbs 1ft. to 1½ft. high, hairy when young, and covered with broad-ovate leaves, which are 5in. long, and somewhat leathery. Flowers on the end of the leafy stems, usually in bunches of three or five; each flower is at least 4in. across, full, and of the purest white, save a blotch of yellow in the throat; the sepals are lance-shaped and pointed; the petals almost as broad as long, blunt; the lip is scoop-shaped, with a large, tongue-like, reflexed front. The blossoms appear in spring, and last several weeks in perfection if the plants are placed in a cool-house whilst in bloom. Unfortunately this grand Orchid is not easily kept in health. Newly-imported plants grow and flower perfectly, but in about three years they get worn out, and are after that worthless. It is a native of British Burmah, where it is found only in the plains low down, growing upon trees, from which it obtains only partial shade. From February to April the plants are exposed to a temperature of 110deg. in the shade, and, consequently, they get a thorough ripening. In the Andaman Islands, where it is also a native, it gets practically no rest, rain falling for about eleven months in the year. Under cultivation, this species should have tropical treatment, with plenty of sunlight and water from May to December, and then a short



DENDROBIUM FINDLAYANUM

($\frac{1}{2}$ nat. size).

rest in a dry intermediate-house. It prefers basket treatment to pots. Introduced in 1837.

Botanical Register, 1839, t. 64.

D. Fytchianum.—A small-flowered Orchid, with erect, slender pseudo-bulbs, 1ft. or more in height, bearing lance-shaped leaves, 4in. long, and deciduous. Flowers in terminal racemes of eight or more, each flower 1½in. across, with narrow sepals, broad petals, and a heart-shaped lip, at the base of which is a tuft of silky hairs. Colour of whole flower pure white, with a tinge of lilac in the throat. Introduced from Moulmein in 1863. It blossoms in April or May. This graceful species should be planted in a small teak basket, suspended near the roof-glass. It requires the same treatment as D. Devonianum.

Botanical Magazine, t. 5444 (erroneously as *D. barbatulum*).

D. Griffithianum.—Closely related to D. densiflorum. Pseudo-bulbs erect, four-angled above, narrowed to a quill-like stalk below, 1ft. or so long, and bearing at the top two or more leathery leaves about 2in. wide and 5in. long. Flowers in terminal, pendulous racemes, the latter 1ft. or more long, each flower 2in. across, bright yellow; the lip orange-yellow, and fringed at the margin. Introduced from Burmah about 1877. It blossoms in May or June, and requires the same treatment as D. densiflorum.

Var. *Guibertianum* has longer racemes and larger and brighter-coloured flowers.

D. Hookerianum.—A noble species, related to D. fimbriatum. Its tall, rod-like pseudo-bulbs are 5ft. or more high, with swollen bases, and clothed, when young, with lance-shaped leaves 5in. long. The flowers are in axillary racemes, produced near the top of the stems, each raceme bearing from six to twelve flowers, which are at least 3in. across, full; the sepals and petals equal, rich golden yellow; the lip broad and spreading, fringed at the margin, and velvety on the upper surface, yellow, with two blotches of deep maroon in the throat. A native of Sikkim and Assam; introduced in 1868. It requires the same treatment as D. Dalhousieanum, and produces its flowers in autumn. Syn. *D. chrysotis.* A poor form of D. fimbriatum often does duty for this grand Dendrobe.

Botanical Magazine, t. 6013.

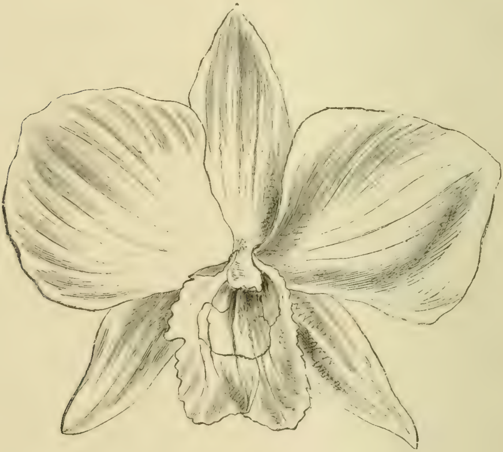


Fig. 54. Flower of Dendrobium infundibulum (nat. size).

D. infundibulum.—An erect-growing species, with stems about 1½ft. high, ¼in. thick, round, bearing black hairs about the nodes. Leaves 3in. long. Flowers on the top of the last year's growth, usually in threes; they are large, often 4in. across, and pure ivory-white, except the lip, which is serrated, and stained with yellow or deep Roman red; they appear during March, April, and May, and last a very long time. The bases of the two lateral sepals are prolonged into a tapering funnel-shaped spur, about 1in. long, from which the plant takes its specific name. For its cultivation this species requires to be grown in a cool, moist house, such as Odontoglossums generally thrive in. We have always found it thrive best when placed in a pot nearly filled with drainage material, and over this a layer of living sphagnum and peat-fibre. It enjoys a liberal

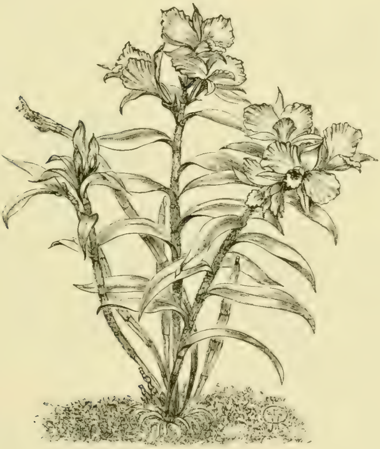


Fig 55. Dendrobium infundibulum
(much reduced)

supply of water when growing, and should be kept just moist at the root when at rest ; but it does not like much watering overhead. This species is a native of the mountains of Moulmein, at an elevation of about 5000ft.

Figs. 54 and 55 ; Botanical Magazine, t. 5446.

Var. *Jamesianum.*—This has stouter pseudo-bulbs, and a differently-formed lip, the front of which is cinnabar-coloured.

D. Jenkinsii.—A dwarf species, with short, ovoid, compressed pseudo-bulbs crowded into a mass, each bearing an ovate leaf 1in. long ; the whole plant scarcely attains more than 2in. in height The flowers appear in early spring, and are mostly in pairs on thin, drooping peduncles ; they are large, and bright orange-yellow in colour, darker in the throat. A native of Northern India. It should be grown upon a block of wood ; it will cling tightly, and eventually completely envelop the block. It thrives in a stove, but requires ripening in a sunny, dry house for about two months in winter. It may be grown along with Cattleya Mossiæ.

Botanical Register, 1839, t. 37.

D. Linawianum.—In habit of growth this species resembles D. nobile, yet is sufficiently distinct from that species to be easily recognised, even when not in flower. It is an erect-growing, evergreen, winter-blooming plant. The stems about 1ft. long, compressed, showing the distinct angles. Leaves 3in. long. Flowers 2in. across, and produced freely in pairs ; they are nearly white in the centre, the rest of the sepals and petals being pale rosy lilac or cerise ; the lip is small, white, with two purple blotches in front, wholly purple in the throat. It is a native of China and Japan, where it is said to be common on walls and in hedges. It is not common in cultivation, although introduced as early as 1824. Syn. *D. moniliforme.*

Botanical Magazine, t. 4153.

D. lituiflorum.—This is a beautiful Orchid similar to D. nobile in habit, &c., but slenderer. The pseudo-bulbs are about 2ft. long, grey, and pendulous. Leaves 3in. long, narrow, deciduous. Flowers 2in. across, usually in pairs, in shape similar to those of D. nobile; sepals and petals amethyst-purple, paler at the base; lip deep maroon, with the front portion white. This plant may be grown in a pot or in a basket, and during the growing season it enjoys a liberal supply of water. Its blossoms are produced in great profusion during the months of April and May. In form they are somewhat remarkable, being curved like a trumpet, with the mouth upwards, whence the name of the species, as the "lituus" of the Romans was a slightly-curved trumpet. It is a native of India.

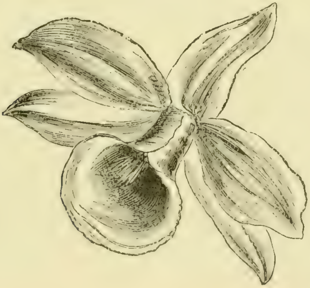


Fig. 56. Flower of Dendrobium lituiflorum
($\frac{2}{3}$ nat. size).

Fig. 56; Botanical Magazine, t. 6050.

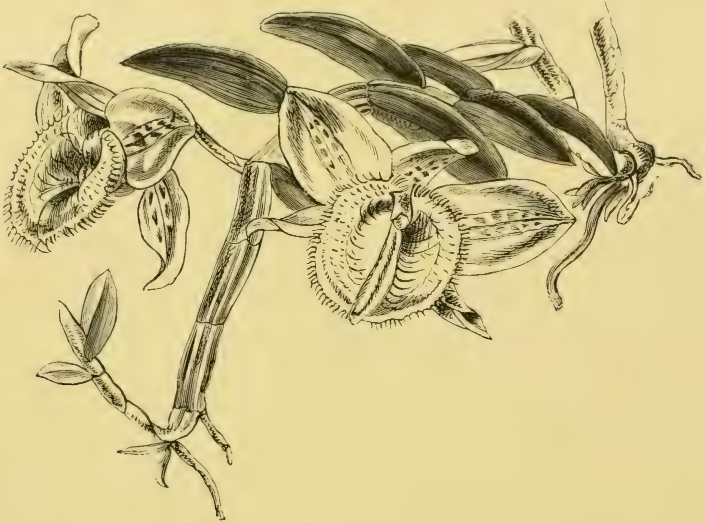
Var. *candidum* has larger flowers, with white sepals and petals, and a yellow lip.

Var. *Freemanii* has shorter, erect stems, and rosy-purple sepals and petals.

D. Loddigesii.—A dwarf-growing, deciduous plant. Stems branching, not more than 4in. long, as thick as a goose-quill. Leaves all over the stem, 1½in. long. The flowers are large, borne singly on short stalks, and are rosy pink, shaded with purple; the lip is stained with orange, and ornamented with a delicate marginal fringe. This a beautiful little plant when well managed, but it is rather a shy bloomer. It should be grown on a block or in a basket, and thrives in an intermediate temperature, with plenty of water whilst growing. During winter it must be kept in a sunny position, and have no water until its flower-buds show. It is easy to grow, but the flowers do not appear unless the plant has had a long and perfect rest. It is a native of China, and was introduced in 1833. Syn. *D. pulchellum* (hort.).

Plate; Botanical Magazine, t. 5037.

D. Lowii. — A pretty - flowered species, related to D. Draconis. The pseudo-bulbs are 1ft. high, erect, leafy on the upper half, the internodes covered with black hairs. Leaves 3in. long. Flowers in compact racemes, developed near the top of the leafy stems, each flower 1½in. across the mouth, somewhat funnel-shaped, with a distinct, straight spur; petals slightly broader than the sepals; lip tongue-shaped in front, reflexed, pale yellow, with six raised lines of reddish hairs; rest of flower pale buff-yellow. Introduced from Borneo in 1861. This plant must be grown in a moist tropical house all the year round. It is equally happy whether on a small block of



DENDROBIUM LODDIGESII

(nat. size).

soft fern stem, or in a shallow teak basket with a little sphagnum about its roots. It develops its blossoms in autumn.

Botanical Magazine, t. 5303.

D. Macarthiæ.—This is certainly one of the very finest of the genus. The stems are 2ft. long, as thick as a goose-quill, erect, grey, purplish at the joints. Leaves narrow, 4in. long. The flowers are large, nearly 3in. in length, and rather more in width; the sepals and petals are very pointed, not so spreading as in D. nobile, and coloured rosy mauve and white; the lip is tongue-shaped, as long as the sepals and petals, pale lavender, striped and blotched with purple, a blotch of deep maroon occupying the middle. The beautiful colouring of this species and the fact of its lasting many weeks in perfection render it a most desirable Orchid. Unfortunately, it is difficult to manage under cultivation, and is therefore somewhat rare. It should be planted in baskets in peat

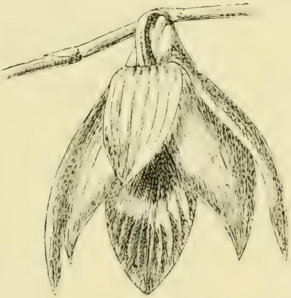


Fig. 57. Flower of Dendrobium Macarthiæ
($\frac{1}{2}$ nat. size).

and sphagnum, and suspended near the glass in the hottest and moistest stove. It should be kept growing till mid-winter, and then rested for about two months. This species is peculiar to the forests of Ceylon, where it hangs from the trunks of large trees. It is known to the natives as the "May Flower," from its time of blossoming. It is said to .be now very scarce in Ceylon. Introduced in 1855.

Fig. 57; Botanical Magazine, t. 4886.

D. moschatum.—A very robust grower, the pseudo-bulbs attaining a length of 5ft. or 6ft. and the thickness of a man's thumb. Leaves all along the pseudo-bulbs, evergreen, leathery, 5in. long, 1½in. wide. Racemes pendent from the top part of the older pseudo-bulbs, the same one flowering two and even three years in succession; each raceme bears from seven to fifteen flowers; sepals oblong, pale buff-yellow; petals much broader but similarly coloured; lip resembling the pouch of a calceolaria, downy inside and out, yellow, with two large, deep maroon blotches, margined with orange. Each flower measures as much as 3in. to 4in. across, and has a musk-like odour. Native of Burmah and Moulmein; introduced in 1825. This is one of the largest- and most ornamental-flowered kinds, but it has the bad character of remaining in bloom only a short time—about a week. It should be grown in an intermediate house, giving it plenty of water in summer and very little in winter. Owing to its size and free-rooting nature, it requires a large, well-drained pot or pan, and a mixture of peat, sphagnum, and charcoal. It blossoms in May or June. Syns. *D. Calceolus*, *D. cupreum*.

Botanical Magazine, t. 3837.

Var. *Calceolaria* has slightly smaller flowers, which are deeper in colour than those of the type.

D. nobile.—This species is at once one of the oldest in cultivation, one of the best-known, one of the easiest-grown, one of the cheapest in commerce, and one of the most beautiful. The pseudo-bulbs are from 1ft. to 3ft. in height, as thick as a man's finger, jointed, leafy. The leaves are about 4in. long and 1in. broad, and they remain on the stems till two years old. The flowers are from 2in. to 4in. across, full, the sepals and petals equal in length, the latter as broad again, and they are white, tinted with amethyst; the lip is funnel-shaped, spreading in front, downy inside and out, maroon-purple in the throat, the front portion white, with a purple tip. The plant is evergreen, and should be grown in a pot or pan

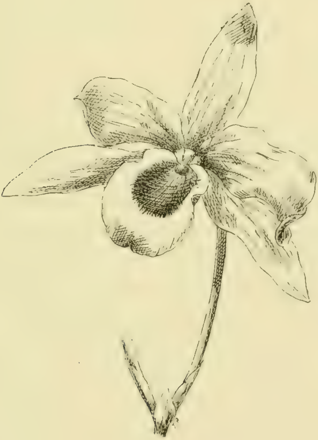


Fig. 58. Flower of Dendrobium nobile
(½ nat. size).

if a large specimen is required: smaller examples may be grown in baskets. When growth is complete, remove the plant to a cool-house, and give it only just sufficient moisture to preserve its pseudo-bulbs from shrivelling. It usually blossoms during spring and early summer: if the flowers are wanted in winter, it should be placed in the stove during the autumn months, and not be allowed to rest. It is a native of China and various parts of India; the first plant known in cultivation was introduced from Macao by Reeves, in 1836. Dr. Lindley considered it the handsomest of all Dendrobes. "Its very stems are so bright and transparent that they form a beautiful object, and the effect of the bright green veins of the leaf-sheaths seen through the semi-transparent skin is very striking. The flowers are unrivalled for delicacy of texture and gracefulness of form; at first nodding, as if their slender stalks were unable to sustain their weight, and then, as they disentangle their ample folds, assuming a horizontal position, with the rich, trumpet-shaped lip forming an apparently solid centre, they seem purposely to raise themselves to the distinct view of the beholder" (Lindley). A specimen of this Dendrobium bearing over 200 flowers was exhibited in 1888 at South Kensington. This is one of the Orchids which vary in scent at different times of the day. M. André says that the blossoms have an odour of grass in the morning, of honey at noon, and a faint primrose scent in the evening.

Fig. 58; Botanical Magazine, t. 5003.

There are numerous beautiful varieties of this species in cultivation. The best of them are:

Var. *cœrulescens.*—Smaller in all its parts, the flowers very deeply coloured.

Var. *Cooksonianum.*—This has the two petals coloured like the lip. It is a remarkably beautiful plant.

Var. *nobilius.*—Flowers larger than in any other form. The sepals and petals brilliant amethyst, paler towards the base; lip deep maroon, with a zone of milk-white in front.

Var. *Sanderianum.*—Flowers large, and brilliant in colour.

Var. *Schrœderianum.*—Flowers large; sepals and petals white; lip deep maroon-purple, almost black, yellowish in front.

D. ochreatum.—A beautiful plant when well flowered. It has short, thick, knotted pseudo-bulbs, which are rarely 1ft. long. Leaves deciduous, lance-shaped, 3in. long, thin and succulent. Flowers on the young pseudo-bulbs at the same time as leaves, 2½in. across, full; sepals and petals equal; lip almost circular, slightly concave, downy; colour deep golden yellow, with a large blotch of deep maroon on the lip. A native of the Khasia Hills, whence it was introduced in 1837. This is somewhat difficult to manage, as it often grows freely, but flowers poorly. The best treatment for it is as follows: Plant in teak baskets, in sphagnum, with a little peat-fibre. When making new growth, the plants should be in a hot, moist stove. After flowering, which should occur in April or May, they should be removed to an airy house, such as a cool vinery, and kept there till they begin to push new growths, when they must be top-dressed or re-basketed, and put back into the stove. Syn. *D. Cambridgeanum.*

Botanical Magazine, t. 4450.

D. Parishii.—A distinct and beautiful species, named in honour of its discoverer, the Rev. C. P. Parish. It bears a certain resemblance to D. nobile, but is in reality perfectly distinct. Even when out of flower it is readily distinguished by its thick, fleshy, leafless stems, which are bent downwards in a stiff, ungainly manner, while the stems of D. nobile hold themselves erect, and taper gradually towards the base. The stems are about 1ft. long. The flowers, which are produced freely in May and June, in groups of two or three, are purplish rose, fading into white towards the centre; the lip, which is shorter than the sepals and petals, is marked inside with rich purple. D. Parishii was introduced in 1862. It succeeds equally well whether grown in a pot or in a basket, and it must be liberally treated to heat and moisture during the growing season, which commences immediately after the blossoms fade.

Botanical Magazine, t. 5488.

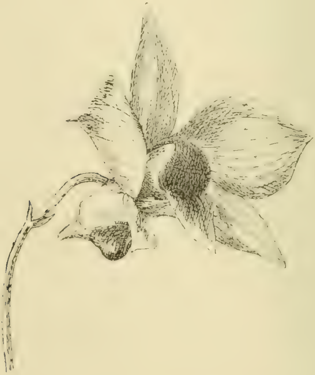


Fig. 59. Flower of Dendrobium Phalænopsis
(½ nat. size).

D. Phalænopsis.—A new and beautiful plant, very rare at present. Pseudo-bulbs 1ft. to 1½ft. in length, ½in. in diameter above, stalked below. Leaves lance-shaped, 5in. long, produced on the upper part of the new growth

Flowers on long, slender scapes, which spring from the top of the leafy growths when mature, strong growths producing six or more flowers each; width of each flower 3in.; sepals lance-shaped and pointed; petals as broad again, both coloured rosy lilac, with darker veins; lip with two arching side lobes and an oblong, pointed front one, the back, with the lateral sepals, forming a broad spur; colour deep maroon in the throat, paler and striped on the front lobe. This plant should be grown on a teak block or raft, in the hottest and moistest stove, from which it should never be removed, but allowed to rest by withholding water. The pseudo-bulbs sometimes die at the base, but if they are fastened to blocks and kept moist, they will push new growth from the upper joints, and these soon develop into flowering plants. A native of North Australia, &c.; introduced in 1880.

Fig. 59; Botanical Magazine, t. 6817.

D. Pierardi.—This is an old easily-grown spring-flowering species, with long, pendulous stems, which often attain to upwards of 3ft. in length. The leaves are ovate or lance-shaped, 3in. to 5in. long, deciduous, and the upper two-thirds of the long stems is laden with long-lasting flowers, in which the sepals and petals are pale mauve, tinged with rose, the broad, flat labellum being primrose-colour, with a few purple lines near the base, the upper surface downy. It is a common Indian species, growing chiefly upon mango-trees, and was introduced to the Calcutta Botanic Garden by M. Pierard, whose name it bears. It is cultivated at Calcutta by tying it on a smooth branch of a tree, to which water is constantly conducted by a string through a small aperture in a vessel above; so treated, it hangs down to the length of 6ft., and is covered with flowers, forming one of the most beautiful objects in the

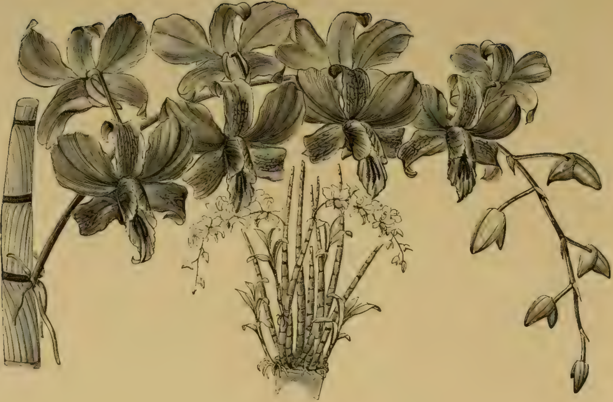
Vegetable Kingdom. With us it thrives when planted in a basket or on a block, and grown along with D. nobile. It has been in cultivation since 1815.

Botanical Magazine, t. 2584.

D. primulinum.—A charming species, easily grown, and a free flowerer. The pseudo-bulbs are about 1ft. long, drooping, as thick as the little finger, grey-green; leaves lance-shaped, 4in. long, deciduous. Flowers in pairs from the joints of the last-ripened growths, each 2in. or more across; sepals and petals narrow and equal, pale mauve; lip 2in. across, covered with soft hair as if frosted, coloured pale primrose-yellow, with a tinge of purple in the throat. This exquisite plant thrives perfectly when treated as advised for D. aureum; it blossoms in March, the flowers lasting several weeks, and emitting a cowslip-like fragrance. A native of Sikkim, &c.; introduced about 1837.

Botanical Magazine, t. 5003 (under name of *D. nobile pallidiflorum*).

D. speciosum.—A sturdy species in which the pseudo-bulbs are very stout, 1ft. or more long, nearly 2in. in diameter at the base, bearing two or three leathery, dark, shining leaves, 8in. to 10in. long, and one-third as wide. It produces a long, terminal, semi-erect raceme (from 1ft. to 2ft. in length) of fragrant, wax-like, creamy or yellowish-white blossoms, which, although not large, are very numerous. They are curiously inverted, the lip appearing to be at the upper part of the flower; the sepals and petals are incurved and narrow; the lip is shorter than the sepals, and is spotted with purple. When this plant is making its young growths, a little heat is necessary; but when these are mature, it should be removed to the open air for two or three months, giving only just sufficient water to prevent shrivelling. It should be grown in a pot,



DENDROBIUM SUPERBIENS, SHOWING HABIT AND PORTION OF PSEUDO-BULB, WITH SPIKE

(Habit, much reduced; Spike, nat. size).

and a little loam and leaf-mould may be added to the compost with considerable advantage. This species has another point of recommendation in the fact that its blossoms appear in the middle of winter, when flowers of any kind are doubly welcome. It is a native of Queensland, Victoria, and New South Wales, where it is known as the "Rock Lily," and was introduced as long ago as 1824.

Botanical Magazine, t. 3074.

Var. *Hillii.*—Stem and leaves longer; racemes more crowded, with flowers which are paler than those of the type. Syn. *D. Hillii.*

Botanical Magazine, t. 5261.

D. superbiens.—A handsome plant, related to D. bigibbum. It has erect, woody pseudo-bulbs, 1½ft. or more high, as thick as the finger, leafy on the upper half till two years old. Leaves broad, 3in. long. Flowers on long, terminal, slender spikes, each flower 2in. across; petals broader than the sepals, both reflexed, and coloured rosy purple, with the margins almost white; lip crimson-purple, short, with incurved side lobes, the front lobe oblong, reflexed, and wavy. A native of tropical Australia; introduced in 1876. This is a variable species, the best varieties being very much superior to the worst. It should be planted either in teak baskets or in Orchid-pans, in a compost of peat, sphagnum, and charcoal. It requires very moist tropical treatment when growing, and to be rested in a dry stove. It blossoms in autumn.

Plate; Sander's Reichenbachia, i., t. 39.

D. superbum.—A magnificent plant, better known under the name of *D. macrophyllum.* The pseudo-bulbs are pendent, from 2ft. to 4ft. long, ½in. in diameter; leaves 6in. long, 1½in. broad, deciduous. Flowers in pairs from the joints of the ripened new growths, each 4in. across; sepals lance-shaped, petals as broad again, both rich magenta-purple; lip folded at the base, heart-shaped in front, hairy on the upper surface, and coloured crimson-purple, paler at the apex. Odour powerful, like that of rhubarb. A native of the Philippines; introduced in 1840. This species should be grown in a teak basket, suspended near the roof, in a hot, moist stove, save for a month or so after it has matured its growth, when it should be kept a little cooler. It produces its splendid flowers in spring.

Botanical Magazine, t. 3970.

Var. *anosmum.*—Stems shorter. Flowers usually produced singly, and almost odourless.

Var. *Huttoni.*—Stems slender. Flowers white, purple in the throat.

D. thyrsiflorum.—This plant is almost identical with that already described under the name of D. densiflorum var. Schrœderi, the only difference between the two being in the characters of the pseudo-bulbs, those of the former being without angles, from 1½ft. to 2ft. high, and brownish when mature; whilst in the latter they are four-angled, short, and green. The flowers of the two are identical. Both plants are ranked among the most beautiful of all Orchids; they are easily grown, and blossom freely and regularly every spring (about April). D. thyrsiflorum is a native of Burmah, and was introduced in 1864.

Fig. 60; Botanical Magazine, t. 5780.

D. tortile.—A pretty species, not unlike D. primulinum. The pseudo-bulbs are club-shaped, 1ft. long, slightly compressed and zigzag, yellowish when old. Leaves lance-shaped, 3in. long. Flowers 3in. across; sepals and petals narrow, twisted, rosy lilac; lip broad, woolly or "frosted" on the upper surface, and coloured pale primrose-yellow, with a purplish blotch in the throat. Native of Tenasserim; introduced in 1847. It blossoms in midsummer, requiring the same treatment as D. aureum. Except in the pseudo-bulbs, there is little difference between D. tortile, D. Pierardi, and D. primulinum.

Botanical Magazine, t. 4477.

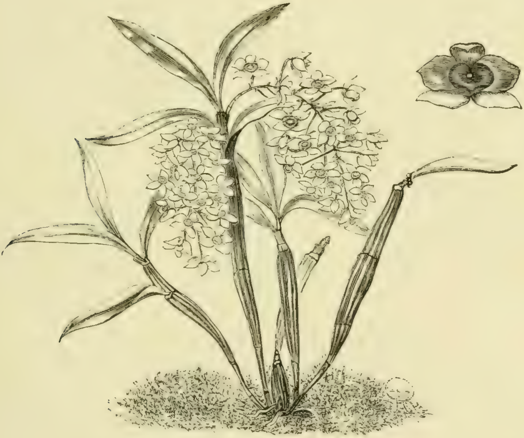


Fig. 60. Dendrobium thyrsiflorum, showing Habit and detached Flower
(Habit, much reduced; Flower, ½ nat. size).

D. transparens.—A beautiful and easily-managed species, with erect, smooth, slender pseudo-bulbs, about 1ft. long, and narrow, deciduous leaves 3in. long. Flowers in pairs on the ripened leafless pseudo-bulbs, each 1½in. across; sepals lance-shaped, petals broader, both coloured pale lilac, tipped with rose; lip shaped as in D. nobile, white, with two purple blotches in front, and pale purple at the apex. Introduced in 1852 from Assam. This species deserves to be much more generally grown than it is now. It should be treated as advised for D. Devonianum; if well grown, it blossoms abundantly in March.

Botanical Magazine, t. 4663.

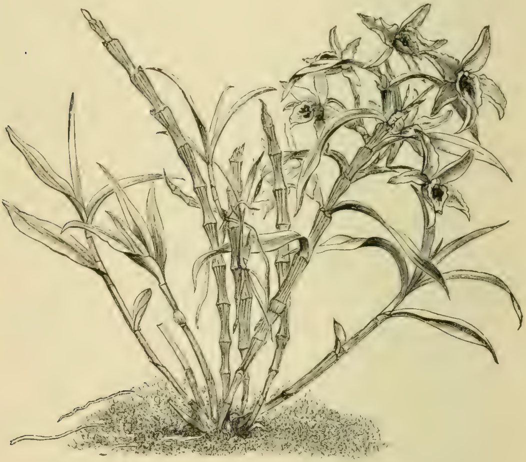


Fig. 61. Dendrobium Wardianum
(much reduced).

D. Wardianum.—This is a gorgeously beautiful species, and one that does well in gardens. The pseudo-bulbs are from 2ft. to 4ft. long, as thick as a man's finger, knotted and pendent. The leaves are lance-shaped, 4in. long, deciduous (falling off before the blossoms appear). The flowers are produced during the months of March and April; they grow in threes on opposite sides of the greater part of the stem, and measure usually from 3in. to 4in. across. The sepals and petals are broad, thick, and waxy, and blunt at the tips, their ground-colour white, the upper portion a bright, rich magenta; the lip is large, white in front, with a blotch of purple on the apex, and rich orange in the throat, with two deep, eye-like spots of amethyst-purple. The flowers last a long time in full beauty. This plant is a native of Assam, and was first flowered in England in 1858. It requires to be grown in a basket or upon a block of wood, as its stems are long and pendulous. During the growing season it enjoys an abundant supply of water, with a high temperature; when the growths are complete, the plants should be removed to a cooler atmosphere, and be kept dry till the flowers begin to open. This usually occurs at the same time as the pushing of new growths, when water must again be given, and the plant re-potted if necessary.

Fig. 61; Botanical Magazine, t. 5058.

Garden Hybrids.

The following are hybrids which have been raised by English gardeners, most of them being of only recent origin. They are at present extremely rare and valuable. The names of the parent plants are here given in parentheses.

D. Ainsworthii (from D. aureum and D. nobile).—A beautiful kind. Flowers large; sepals and petals French white, tipped with rose-purple; lip deep amethyst-red, with a white margin. 1874.

D. chlorostele (from D. Linawianum and D. Wardianum).—1887.

D. chrysodiscus (from D. Ainsworthii and D. Findlayanum).—1887.

D. Cybele (from D. Findlayanum and D. nobile).—1887.

D. Dominianum (from D. nobile and D. Linawianum). —1870(?).

D. Endocharis (from D. japonicum and D. aureum). —1876.

D. euosmum (from D. Endocharis and D. nobile).—Flowers large, white and purple, very fragrant. 1885.

D. Leechianum (from D. nobile and D. aureum).—This is very near D. Ainsworthii, but larger and deeper-coloured. 1882.

D. melanodiscus (from D. Findlayanum and D. Ainsworthii).—1889.

D. micans (from D. Wardianum and D. lituiflorum).—1879.

D. Pitcherianum (from D. nobile and D. primulinum). —1888.

D. porphyrogastrum (from D. Huttoni and D. Dalhousieanum).

D. rhodostoma (from D. Huttoni and D. sanguinolentum).—1876.

D. Schneiderianum (from D. Findlayanum and D. aureum).—1887.

D. splendidissimum (from D. aureum and D. nobile). —1879.

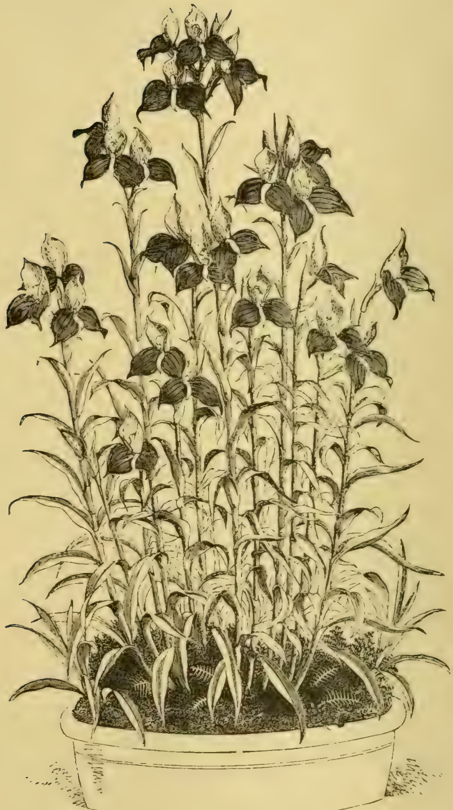
D. Vannerianum (from D. japonicum and D. Falconeri). —1887.

CHAPTER XXX.

DISA.

OVER a hundred distinct species of Disa have been described, all of them natives of Africa, mostly in the south temperate region. Of this number scarcely half-a-dozen are in cultivation in gardens here, and only two of these can be considered really good garden Orchids. There is no doubt about the beauty of many of the species which are unknown in English horticulture, but as yet all efforts to establish them in gardens have invariably resulted in failure. This is due to the difficulty—impossibility, one might say—of reproducing artificially anything approximating to the conditions under which these plants grow naturally. The same may be said of most of the terrestrial Orchids of Africa, many of which are of exceptional beauty, but they do not thrive in European gardens. The three species here described are, however, exceptions to this general rule as regards African Orchids. They are quite distinct in floral character from all other garden Orchids, and when well managed they make a rich display whilst in blossom. They have tuberous rootstocks, and leafy annual stems, from which runners are sent out freely every year. They make their growth in our winter and spring, and blossom in early summer, remaining in bloom for six weeks or more. They grow naturally in very moist places, often in the bed of a stream which becomes partially dry in the hot season.

Culture.—The most successful growers of D. grandiflora are Mr. Moore, of the Botanic Gardens, Glasnevin; Messrs. Backhouse and Sons, of the York Nurseries; and Mr. O. Thomas, gardener to the Duke of Devonshire at Chatsworth. At Glasnevin the plants are grown in an ordinary greenhouse in great quantities. In the York Nurseries they are planted in a bed of peat and sandstone, in a cool greenhouse, where they grow, flower, and multiply, most satisfactorily. Mr. Thomas has had exceptional success with this species, and as the treatment he adopts is simple and easy to follow, we cannot do better than quote his instructions here. He says: "I suppose there are very few Orchids the growing of which has puzzled more experienced Orchid-growers than this Disa; and what makes it more tantalising is the fact that here and there its cultivation is the simplest matter imaginable. Here [at Chatsworth] we have no plants which give us less trouble than the Disas. Our plants have occupied the same position for years—namely, a wooden stage in the Cape heath house, one portion of the stage being over the water-tank, and close to an outer door, which is left open during the day in the summer, as well as the side ventilators opposite, so that there is always a strong current of air playing among the plants. Here the plants remain till they flower. We re-pot them about the middle of December, in a mixture of fibrous peat and sphagnum, in equal quantities, with a sprinkling of broken crocks and charcoal. The plants are potted firmly, the crowns being well elevated above the rim of the pot, and the pots well drained. I prefer pots with perforated sides,



DISA GRANDIFLORA

(much reduced).

as the offsets find their way through the side holes quicker and better than when they have to push their way through to the surface. The plants are moderately and carefully watered until they are in active growth—say, from March till flowering time, when they must receive abundance of water overhead with a rose-pot. On very warm days it will be necessary to apply water three or four times a day. When the flowers are over, less water is given, but the plants are never allowed to approach dryness at the root. The Disa is propagated from offsets and by division of the roots." To this we need only add that in winter the temperature ought not to fall lower than 40deg. A position in a house which suits cool Odontoglossums will be found agreeable to Disas. At Kew, where D. racemosa is successfully grown, the treatment it gets is similar to that above recommended for D. grandiflora.

D. grandiflora.—Rootstock tuberous. Stem erect, unbranched, 1ft. to 2ft. high, leafy. Lower leaves 6in. long, and dark green; the upper ones smaller, those near the flowers being reduced to bracts. Flowers terminal, one, two, three, or even more, being produced on each stem; upper sepal ovate, 3in. long, hooded, pointed at the apex, spurred at the base, deep rose-coloured, with carmine veins; side sepals ovate-oblong, 2½in. long, brilliant carmine-red; petals and lip small, tinted orange. In some varieties the sepals are orange-tinted, and others have the hooded sepal coloured rose-purple. Introduced from Table Mountain, near Cape Town, in 1825. Syn. *D. uniflora.*

Plate (for which we are indebted to the Editor of the "Gardeners' Chronicle"); Botanical Magazine, t. 4073.

D. racemosa.—Rootstock tuberous. Stem erect, proliferous at the base, unbranched, leafy. Lower leaves about 4in. long, the upper ones small, all shining green. Strong plants produce flower-stems 1½ft. high; these stems bear from six to twelve handsome flowers, which open in slow succession and remain fresh a long time; upper sepal ovate, concave, 1in. long, blunt at the apex, pouched at the base; side sepals spreading, 1in. long, ¾in. wide; petals and lip small, colour a beautiful rose, with darker veins; sepals crimson and yellow, with purple stripes. Introduced from South-east Africa in 1887. Syn. *D. secunda.*

Botanical Magazine, t. 7021.

D. tripetaloides.—A very recent introduction, which promises well as a garden plant, being free-flowering and easily cultivated. Mr. O'Brien, who introduced and flowered it a few weeks ago (summer of 1889), says: "It is not only the freest-growing and most profuse-flowering Disa I ever saw, but also the most easily grown of all South African terrestrial Orchids." It has thick, fleshy roots, a stoloniferous stem, lance-shaped leaves, 3in. long, leathery in texture, and arranged in a compact rosette. The flower-stem is erect, 1ft. or more long, and bears from twelve to twenty flowers; each flower is about 1½in. across, and is white, tinged with pink, and dotted with rose-purple; the helmet-shaped dorsal sepal has a short spur. The plant remains in flower a long time. Although new to cultivation, this species was discovered more than a hundred years ago. Syn. *Orchis tripetaloides.*

CHAPTER XXXI.

EPIDENDRUM.

THIS is a very extensive genus, comprising about 400 species, natives of South America and the West Indies, and varying much in habit and size. Among them are many which are not deserving a place in the amateur's collection. All the species are epiphytes. Dr. Lindley says that the essential character of the genus consists in the lip being more or less united by a fleshy base to the edge of a column, which is hornless, and considerably elongated, but not petaloid and winged; in the pollen-masses being four, equal and compressed; and in the presence of a passage more or less deep at the base of the lip. The name Epidendrum was at one time applied to nearly all the Orchids which were known to grow on trees; but it has since been limited to the plants possessing the above characters.

As this genus includes several plants hitherto known under other names, and as a considerable number of handsome-flowered kinds have recently been introduced, the list of useful garden Epidendrums is a fairly long one. Even those kinds which are wanting in ordinary attractions, have characters which are of sufficient interest to recommend them to some amateurs. Some of them are deliciously fragrant, as, for instance, E. fragrans,

E. purum, E. radiatum, &c. Only those known to possess good ornamental flowers are, however, described here.

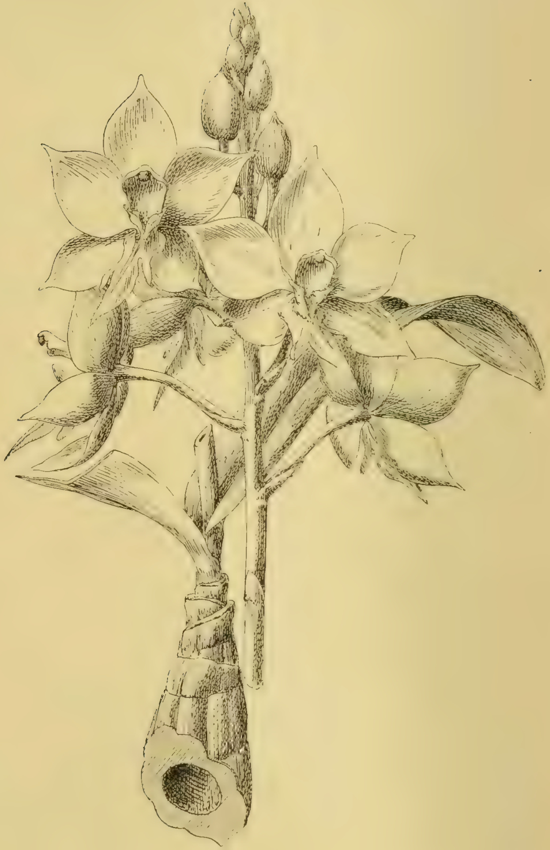
Culture.—Nearly all the cultivated Epidendrums thrive when grown in the Cattleya-house and treated as if they were Dendrobiums. E. vitellinum and E. bicornutum are exceptions; their treatment is given under their respective names.

E. atropurpureum.—In this species the pseudo-bulbs are ovate and wrinkled, bearing a pair of narrow, dark green, leathery leaves. From between the latter is produced a long spike, bearing several large flowers, which have spreading, oblong sepals and petals, of a dark brown colour, greenish at the base; the lip is large, spreading, three-lobed, and pure white, with a feather-like blotch of reddish purple at the base. A very handsome species, well deserving a place in the smallest collection of intermediate-house Orchids. It blossoms in spring and early summer. It is a native of America, from Costa Rica to New Grenada, and was introduced in 1836. Syn. *E. macrochilum.*

Botanical Magazine, t. 3534.

Var. *roseum* has purple sepals and petals, and a rose-coloured lip.

E. aurantiacum.—A free-growing plant, with pseudo-bulbs and foliage very similar to those of Cattleya Skinneri. The flowers are produced in short, arching recemes, which spring from the apex of the last-matured pseudo-bulbs; they are 1in. across, the sepals and petals nearly equal, spreading, pointed, and of a bright cinnabar-red, a shade darker than the colour of those of Lælia harpophylla; the lip is small, incurved at the edges, and lined with crimson on an orange ground. The blossoms appear in February or March, and last several weeks. The plant should be treated as advised for Cattleya



EPIDENDRUM BICORNUTUM

($\frac{2}{3}$ nat. size).

Skinneri. Native of Mexico; introduced in 1836. Syn. *E. aureum.*

Gartenflora, t. 158.

E. bicornutum.—This is a remarkable and very handsome species, quite distinct from any other in the genus. The pseudo-bulbs are stout, 1ft. to 1½ft. high, inflated in the middle, and hollow, and produce stout, leathery leaves near the apex. The spike is terminal on the young full-sized growths, and produces from six to twelve large flowers, of good substance and pure ivory-white, save a few small, crimson spots on the lip. The sepals and petals are similar, spreading and overlapping; the lip is three-lobed, the central lobe much the longest, and having two prominent ridges of canary-yellow. This, it must be confessed, is a somewhat difficult plant to grow. We have found it succeed best when grown in teak baskets, well drained with crocks and charcoal, and planted in live sphagnum moss, to which a good sprinkling of silver sand has been added. Whilst making their growth, the plants should be placed in a hot, steamy atmosphere, and in a sunny position. They also require liberal supplies of water at the root. Naturally they grow on bare rocks and tree trunks near the sea, where they get abundance of atmospheric moisture during hot weather. Their flowers expand about April, and remain fresh about six weeks. Unless a hot, moist stove is available, the culture of this plant should not be attempted. It is the most beautiful of all Epidendrums. Native of the West Indies and Guiana; introduced in 1834.

Plate; Botanical Magazine, t. 3332.

E. indivisum is simply a variety of this with smaller pseudo-bulbs and flowers. It is also interesting as being one of the few Orchids which are certainly self-fertilising.

E. Brassavolæ.—Pseudo-bulbs pear-shaped, compressed, 6in. or more long, bearing two oblong leaves 9in. long, and a many-flowered, branching scape. Each flower measures 4in. across, the sepals and petals being narrow, curved, and brown-yellow in colour; the lip rhomboid at the base, and pale yellow, narrowed to a long apical point in front, where the colour is pale purple. The flowers are very fragrant, especially in the evening. This curious- and handsome-flowered species is easily grown if kept in the Cattleya-house and treated as advised for C. Skinneri. It blossoms in spring, and remains fresh several weeks. Native of Central America; introduced in 1867.

Botanical Magazine, t. 5664.

E. ciliare.—Pseudo-bulbs club-shaped, 6in. long, bearing two or three apical leaves, oval or oblong in shape, and blunt at the ends. The flower-scape is about 6in. long, and bears three to six whitish flowers, each about 5in. across, with narrow segments, and a three-lobed lip, with a long point and deeply-fringed sides. The flowers vary in size and purity of colour; they are developed in winter, remain fresh for several weeks, and are deliciously fragrant. This is an old garden plant, having been introduced about 1795 from tropical America, where it is one of the most widely distributed of all Orchids. Syn. *E. cuspidatum.*

Botanical Magazine, t. 463.

E. dichromum.—This is a dwarf-growing and very handsome plant. The clustered pseudo-bulbs are 3in. to 6in. long, supporting two or three dark green, leathery leaves, from 6in. to 1ft. or more in length. The scape is 2ft. to 3ft. high, and many-flowered; the flowers are sometimes 2in. to 3in. in diameter, the sepals narrow, and the petals broad, bright rose in some varieties, in others white; the three-lobed lip is of a rich crimson, with a lighter margin. This charming species blossoms at various seasons. It requires tropical treatment and plenty of water whilst growing. When in flower it should be removed to an intermediate temperature. Native of Brazil. Syn. *E. amabile.*

Botanical Magazine, t. 5491.

E. evectum.—A tall, free-growing plant, with reed-like pseudo-bulbs 5ft. or more long, clothed with bright green foliage on the upper part. Flowers in globose heads, on long peduncles on the ends of the ripened pseudo-bulbs. Each head continues to develop fresh whorls of flowers as the lower ones fade, so that the plant remains in blossom almost all the year round. Each flower is ¾in. across, with a three-lobed lip, the colour being bright purplish red. This species is easily cultivated, and from its healthy, well-furnished appearance at all times, and its free-flowering habit, it merits a place in all large warm greenhouse collections. It is a native of New Grenada, whence it was introduced some years previous to 1871.

Botanical Magazine, t. 5902.

The following, with several others of similar character, are in favour in some collections:

E. Frederici Gulielmi (flowers of a dark purple); *E. ibaguense* (flowers orange-scarlet); *E. Schomburgki* (flowers vermilion-scarlet); *E. syringothyrsus* (flowers reddish purple). Broadly speaking, they are the same in habit and inflorescence as E. evectum, but differ in the form and colour of their flowers.

E. falcatum.—A remarkable plant, having long, creeping stems, from which spring thick, fleshy, lance-shaped, falcate, drooping leaves about 1ft. long, and glaucous green in colour. The flowers, which are usually produced in pairs, have spreading, narrow sepals and petals, 2½in.

long, and brownish green in colour; the lip is dark yellow, three-lobed, the two side lobes rounded, the middle one narrow and spear-like. The flowers are usually developed in summer, and remain fresh for several weeks. This species may be planted in a basket, in peat and sphagnum, or fastened to a block and hung near the glass in an intermediate house. It is a native of Mexico. Syns. *E. aloifolium*, *E. Parkinsonianum.*

Botanical Magazine, t. 3778.

E. nemorale.—This is a beautiful plant, which is easily grown if treated along with Cattleya Mossiæ, and exposed to the full sun. The pseudo-bulbs are conical, 4in. long, bearing a pair of strap-shaped, coriaceous, bright green leaves 1ft. long. The panicles are covered with warts, and are 2ft. to 3ft. long, and many-flowered; each flower is 4in. across, delicate in texture, the narrow, spreading sepals and petals being of a soft rose or delicate mauve; the lip is three-lobed, crenulate, white, lined with red, and having a marginal border of dark rose. The flowers appear during summer, and are very fragrant. Native of Mexico; introduced in 1844. Syn. *E. verrucosum.*

Botanical Magazine, t. 4606.

E. O'Brienianum.—A hybrid raised by Messrs. Veitch, of Chelsea, the parents being E. radicans and E. evectum. It is interesting as being the first Epidendrum originated in English horticulture. It was flowered for the first time in 1888. The flowers are as large as those of E. radicans, and the lip resembles that of E. evectum.

E. prismatocarpum.—The singular mixture of colours in the flowers of this evergreen plant renders it very showy and attractive. The pseudo-bulbs are flask-shaped, wrinkled, some 10in. or 12in. in height, and, together with the leaves, dark green. The erect scape bears a raceme of ten or twelve fragrant flowers; the lance-shaped, pointed sepals and petals are creamy yellow, spotted with dark purple; the lip is small, rose-coloured, with a pale yellow margin. The plant blossoms during the summer months, and lasts several weeks if the flowers are kept dry. It is a native of Central America, and was introduced in 1865. Syns. *E. maculatum*, *E. Uro-Skinneri.*

Botanical Magazine, t. 5336.

E. radicans.—A handsome species allied to E. evectum, but much more graceful. It has long, thin stems, which are described as scandent when wild, and attaining a length of 9ft. or more. Leaves from 3in. to 5in. long, less than 1in. wide, fleshy, shining green. Long white roots are developed freely from every part of the stem, and these add to the attractiveness of the plant. Flowers numerous, nearly 2in. across, in terminal panicles; sepals and petals equal, spreading, ovate-lanceolate, bright orange-scarlet; lip stalk-like at the base, the upper part flat, three-lobed, and fringed; colour deep yellow, edged with scarlet. This gorgeous plant should be trained on a balloon or such-like trellis and be kept in a moist stove always, being shaded only during very bright sunshine. It does not as a rule flower freely, although, a few years ago, we saw a plant which bore eighty-six heads of flowers. It blossoms in spring and summer, the flowers lasting a long time. Introduced from Mexico about 1860. Syn. *E. rhizophorum.*

Garden, 1883, t. 412.

E. vitellinum var. **majus.**—This is a dwarf-growing plant, which thrives in a low temperature and moist atmosphere, and is one of the brightest-coloured of all Orchids. The short, egg-shaped pseudo-bulbs and narrow leaves are glaucous green; the racemes are erect, from 8in. to 12in.

in height, bearing numerous thick and fleshy flowers, which have lance-shaped, orange-scarlet sepals and petals, and a bright yellow lip. The unusual colour of the flowers and the long time they last in full beauty (fully two months) render this a most desirable plant. It blossoms during summer, and being a sub-alpine plant is very easily cultivated. It may be grown either in shallow pans or pots, or on a block or raft of teak wood; but it must have plenty of moisture always, and a temperature similar to that which suits Odontoglossum Rossii. It likes plenty of sunlight. It was introduced from Mexico in 1840.

Botanical Magazine, t. 4017.

Var. *majus* is really larger-flowered than the type. As a rule, however, all the plants in cultivation are called E. vitellinum majus, however poor in flower they may be.

E. Wallisii.—A distinct and pretty-flowered species, with reed-like stems about 2ft. high, and covered with raised dots of purple. The leaves are 4in. long, and arranged in two regular series. The flowers are produced from the top of the stems, and are either terminal or axillary; strong stems bear several bunches of flowers, each of which remains fresh for six weeks or more. The blossoms are 1½in. across; sepals and petals equal, strap-shaped, yellow, spotted with crimson; lip large, fan-shaped, white, with feathery lines of crimson. Healthy plants are in flower quite half the year, and the flowers have a sweet, musk-like odour. This species should be grown in a warm, moist greenhouse, or along with Cattleya Mossiæ. It requires plenty of water all the year round, as, indeed, do all the species with tall, reed-like stems. Native of New Grenada.

Williams' Orchid Album, ii., t. 74.

CHAPTER XXXII.

GALEANDRA.

THIS genus consists of about ten species, all of which are natives of tropical America. Three or four only are worth cultivating: these, when their requirements are properly understood, are very satisfactory, because of the beauty of the flowers and the long time they remain in perfection. They have erect, stem-like pseudo-bulbs, bearing several long and narrow leaves in two opposite rows, and producing the inflorescence from the top as soon as growth is completed. The distinctive part of the flower is the lip, which is large and somewhat funnel-shaped.

Culture.—The best success with these plants is attained by growing them in well-drained pots or baskets of fibrous peat, in a light position near the glass in the warm house, with copious supplies of water during the time of active growth. When that period is over they must be removed to cooler quarters, and the amount of water at the root proportionately reduced. Their greatest enemies are thrips and red spider: these must be closely guarded against by keeping a moist atmosphere about the plants, and by occasionally dipping them in weak tobacco-water.

G. Baueri.—This is a pretty-flowered species, with three-nerved, lance-shaped leaves, and pseudo-bulbs about 1ft.

high, bearing from the top a drooping raceme of flowers, each being about 2in. across. The sepals and petals are narrowly oblong and pointed; they are brownish green in colour, the petals being slightly darker. The lip is broad at the front, narrowing to a spur at the base, with the edges curling above the column; the front portion is purple, and the outside white. This species flowers from June to August, and is a native of South Mexico, Guiana, and Guatemala.

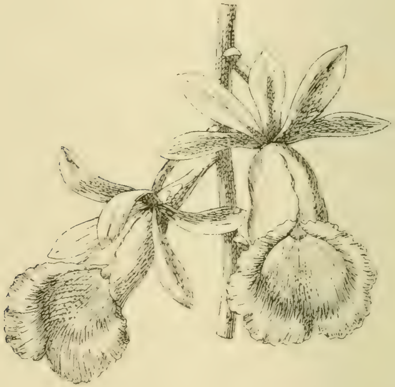


Fig. 62. Flowers of Galeandra Baueri
($\frac{2}{3}$ nat. size).

Fig. 62; Botanical Register, 1840, t. 49.

Var. *lutea* has flowers of a deep yellow colour, the front of the lip being marked with blood-coloured lines.

Botanical Magazine, t. 4701.

G. Devoniana.—Growing in its natural state the pseudobulbs of this species reach a height of 5ft. to 6ft.: under cultivation, however, they are rarely more than about 2ft. long. They are round and erect, producing from the apex a pendent flower-scape. The beautiful flowers are 3in. to 4in. across, having darkish purple sepals and petals, the edges of which are green. The ground-colour of the lip is white, the apex being beautifully striped with purple. This species was first discovered by Schomburgk on the banks of the Rio Negro—a tributary of the Amazon—and introduced in 1840. It blossoms in summer.

Botanical Magazine, t. 4610.

G. flaveola.—A new introduction from some country not mentioned, but probably Brazil. It flowered for the first time in 1887, with the International Society of Horticulture at Brussels. It is strong in habit, with pseudo-bulbs 9in. long, thickening downwards. Leaves linear. Peduncle reddish, bearing a raceme of eight flowers; sepals and petals lanceolate, yellowish; lip yellow, with very small, hyaline dots in lines on the lobes; column with a blackish apex.

G. nivalis.—This is a scarce and pretty species, of recent introduction. It produces a pendent raceme of flowers from the top of the erect, tapering, and greyish-coloured pseudo-bulbs. The leaves are long and narrow, and the flowers measure about 2in. in length. The sepals and petals are olive-coloured, narrow, and reflexed; the funnel-shaped lip being white, with a violet blotch in the centre. A native of tropical America; introduced in 1882. It blossoms in March.

Gardeners' Chronicle, xvii. (n. s.), fig. 85.

CHAPTER XXXIII.

GRAMMATOPHYLLUM.

THIS genus consists of about five or six species, none of which are often seen under cultivation. When well grown and flowered they are, nevertheless, very handsome and striking plants. The pseudo-bulbs are of large size, and bear stout, oblong, pointed leaves in opposite rows. The loose racemes of numerous flowers are produced from the base of the pseudo-bulbs. The flowers are large, and showily coloured. The species are natives of Madagascar, Malacca, and the Malayan Peninsula and Archipelago.

Culture.—Grammatophyllums do not lend themselves to our artificial conditions so freely as most Orchids, therefore more than ordinary care is required in their management. Indeed, we should not advise the amateur to commence the cultivation of these plants until he has become familiar with the treatment of more easily-grown Orchids. The plants should be grown in perfectly-drained pots or baskets, and as they root freely and do not like disturbing, these should ~~be~~ of rather large size. A compost of peat fibre and sphagnum suits them best, to which may be added, as potting proceeds, pieces of charcoal or broken brick. They must be liberally supplied with water during active growth; but after they have become well established, a decided period of rest is needed to ensure their flowering. All the species enjoy a light position near the roof-glass in a brisk, stove heat.

G. Ellisii.—This is perhaps the most desirable species in the genus, being of convenient size, free-flowering, and when in blossom it is a most attractive sight. The pseudo-bulbs are from 12in. to 14in. high, somewhat four-angled and fusiform. The leaves are arching, broadly strap-shaped, and from 1½ft. to 2ft. long. The flowers are produced in a graceful, curving raceme, thirty or forty occurring together; they are large, and have a bright, varnished appearance. The sepals (the upper one of which is arching, and the side ones cupped or gibbous) are of a tawny yellow, with several transverse, reddish-brown lines towards the base, a similarly-coloured blotch occurring near the pointed tip; the petals are smaller; and the lip is white, with a pinkish tinge. This species flowers in July and August from the base of the young growths. It was introduced from Madagascar, by the late Rev. Mr. Ellis (after whom it is named). Syn. *Grammangis Ellisii.*

Botanical Magazine, t. 5179.

G. Fenzlianum.—Pseudo-bulbs stout, ovate, compressed, about 5in. long, and bearing broad, leathery, arching foliage, 1ft. or more long. Flowers numerous, on stout, long, arching racemes, each flower being 3in. across, and yellowish, with brown spots. Probably a native of Madagascar. A recent introduction. Syn. *G. Measuresianum.*

G. speciosum.—This has been termed the "Queen of Orchids," and is said to be the largest known. It produces stout, woody pseudo-bulbs 5ft. to 10ft. in height, these being erect and clothed at the upper part with leathery, sheathing leaves, 1½ft. to 2ft. long. The flower-scape is from 5ft. to 6ft. high, and erect. The flowers are 6in. in diameter, the sepals and petals being broadly oblong, wavy at the margin, and of a rich yellow ground-colour, blotched and spotted with reddish purple; the lip, which is three-lobed and comparatively small, is yellow, streaked with brownish red. A native of Java, Singapore, Cochin China, &c.; introduced in 1837. This gigantic Orchid cannot be successfully grown unless placed in a very hot stove, in full sunshine, and with the atmosphere kept constantly saturated. It was first flowered in the once famous nurseries of Messrs. Loddiges, of Hackney, and again by the late Mr. Day, of Tottenham; but in both cases the flower-spike was small, and it was developed very shortly after the plant had arrived in this country. Mr. Day, who had seen it growing in all its native luxuriance at Singapore, recommended the treatment here advised, which is being tried for some plants of this Orchid now in the Kew collection. The roots of this species sometimes grow erect, and develop short, spine-like rootlets, which, when dry, are as hard as thorns. All the Grammatophyllums appear to have the habit of developing these upright or heliotropic roots.

Botanical Magazine, t. 5157.

CHAPTER XXXIV.

HOULLETIA.

A SMALL, epiphytal genus, related to Stanhopea, and of which about six species have been introduced from South America. They have short, conical, clustering pseudo-bulbs, bearing one large, plaited leaf, with a petiole of rather unusual length. The flower-scapes are tall and erect, producing large and finely-marked flowers, with spreading sepals and petals. The lip is united to the column, and is of very remarkable structure; it is divided into two parts, the basal one of which is furnished at each side with a curving, horn-like process almost the length of the column. The apical part is broader and articulated, and often develops two short, pointed lobes at the base.

Culture.—Although of such a distinct and ornamental character, Houlletias are not common in gardens: nevertheless, when in flower, few Orchids are more effective. They may be grown along with the Cattleyas, where they should be shaded from bright sun, and the atmosphere about them be kept moist. They may be planted in baskets of fibrous peat, with a surfacing of sphagnum, and liberal supplies of water ought to be given when they are making their growth.

H. Brocklehurstiana.—One of the best of the genus, with very distinct and showily-coloured flowers. The stout, ovate pseudo-bulbs are about 3in. high, deeply furrowed, and tapering towards the top; they each bear a solitary, pale green leaf, 1ft. to 1½ft. in length, broadly lance-shaped and plaited. The flower-stems originate at the base of the pseudo-bulbs, are about 2ft. long, and bear from ten to twelve flowers. The oblong sepals and petals are concave, usually of a rich reddish brown, thickly marked with spots of a purplish tinge. The basal part of the lip is yellow, freely spotted with purplish brown, and has two pointed, recurving horns at the sides; the somewhat triangular terminal lobe is almost entirely purple. In some forms the colour is much darker, and in others the ground-colour of the lip is nearly white, striped and spotted with purple. A native of Brazil; introduced in 1841. Syn. *Maxillaria Brocklehurstiana.*

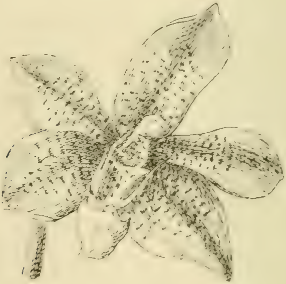


Fig. 63. Flower of Houlletia Brocklehurstiana
(⅔ nat. size).

Fig. 63; Botanical Magazine, t. 4072.

H. odoratissima.—A handsome-flowered species, having ovate pseudo-bulbs, light green, lance-shaped, plaited leaves, and erect flower-scapes from 1ft. to 1½ft. high. There are about six flowers on each scape, and each flower is 3in. across; sepals and petals oblong, pale purplish red, with lines of a deeper colour; column and lip white, with a pair of reddish horns at the base; odour powerful and violet-like. Introduced from Colombia in 1851.

Var. *antioquensis* has broader sepals and petals, and coloured a rich reddish crimson, the outside being brown. It is an improvement on the type.

Var. *xanthina* has sepals and petals orange-yellow, and a white lip tipped with yellow.

H. picta.—This very handsome Orchid, has furrowed pseudo-bulbs 3in. high by 1in. broad at the base, tapering towards the top, and bearing a broadly lance-shaped leaf, which measures 1½ft. in length, and narrows at the base into a distinct stalk 2in. to 3in. long. The flowers are 3½in. in diameter, and are produced on a stem which springs from the base of the pseudo-bulb and attains a height of 1½ft.; vigorous plants will develop nine or ten flowers on a spike. The sepals are narrowly oblong, with rounded tips, and, together with the petals (which are much narrowed at the lower half), are cinnamon-coloured, the basal portion of each being tessellated with yellow. The terminal division of the lip is yellow, marked with transverse bars of reddish purple, spear-shaped, with a recurving, channelled apex; the inner lobe is yellow, spotted with crimson-purple, smaller and somewhat trapeziform, and is furnished at the sides with two ascending spurs. The length of the whole lip is 1½in. A native of New Grenada.

Botanical Magazine, t. 6305.

CHAPTER XXXV.

LÆLIA.

In the introductory notes on the genus Cattleya, reference was made to the nearness of the relationship between that genus and Lælia. The latter is separated into two groups, viz: (1) all those species which are natives of Mexico and Guatemala, including albida, anceps, autumnalis, furfuracea, majalis, rubescens, and superbiens; (2) those kinds which are similar in habit and flowers to the Cattleyas, and of which crispa, Dormaniana, elegans, lobata, and Perrinii, are examples.

Culture.—The cultural requirements of the second group are practically the same as recommended for Cattleyas generally. The first group, however, is rather more difficult to manage. The plants should be placed in well-drained pans, or on rafts of teak-wood, and suspended near the roof-glass of the house; very little soil is required, a small quantity of peat-fibre, mixed with sphagnum moss, being sufficient. The temperature during the growing season should be from 60deg. to 65deg. by day, and from 53deg. to 60deg. by night; but during bright, warm weather it may be allowed to run up much higher than this, if only plenty of air and moisture are supplied. The plants should be examined for water twice daily in hot weather. They should not be shaded at any time. When growth is finished, less water is needed; and, finally, when the new pseudo-bulbs are plump and ripe, water should be altogether withheld, and the temperature maintained as low as that out-of-doors in ordinary weather. Some growers place such species as majalis and furfuracea outside and expose them to full sunshine during August and September. In fact, we have found this the only treatment likely to produce flowers in the case of L. majalis.

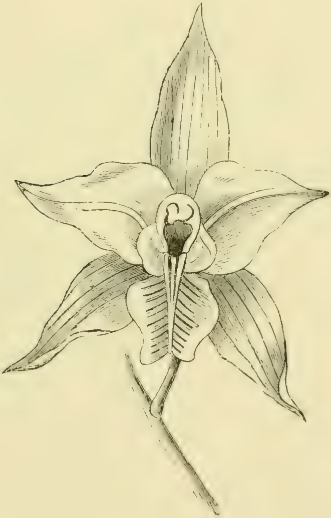


Fig. 64. Flower of Lælia albida
(nat. size).

L. albida.—This is a very elegant species, with oblong or pear-shaped pseudo-bulbs, bearing usually two strap-shaped, coriaceous, dark green leaves, about 6in. long.

The scape is 1½ft. or more high, and bears from three to six flowers, which are not large, but very fragrant and graceful; the sepals and petals are white, tinted with rose; the lip also is white, or pale pink, streaked in the centre with lines of yellow; the middle lobe is curled back. A native of the mountains of Mexico, whence it was introduced about 1832. It is frequently imported in large quantities, and is usually cheap. After about four years' cultivation, it is apt to become weak and beyond management. It flowers in November and December.

Fig. 64; Botanical Magazine, t. 3957.

Var. *bella*.—Flowers flushed with rose; lip bright rose.

Var. *Stobartiana*.—Ends of sepals, petals, and lip, coloured bright purple.

Var. *sulphurea*.—Flowers pale sulphur-yellow.

L. anceps.—This is a larger-growing plant than albida. The pseudo-bulbs are ovate and somewhat compressed. The leaves solitary, rarely in pairs, broadly lance-shaped, bright shining green. The scape is 2ft. to 3ft. long, flattened, jointed, and bears from three to six flowers, 4in. across: the sepals and petals are nearly equal, lance-shaped, and purplish rose or rosy lilac; the lip is funnel-shaped below, with a tongue-like front lobe, the colour being deep purple, shaded with rose, yellow in the throat, with purple streaks. There are many varieties of this species; they vary chiefly in the intensity of colour or the numbers of the flowers which are borne upon the scape, but all are beautiful. L. anceps will thrive under block- or basket-culture, but as it attains a considerable size, the weight renders it best adapted to pot-cultivation. It is one of the easiest of Orchids to manage. We have grown good specimens of it in a house devoted to Maidenhair Ferns. It blossoms during the months of December and January, at which time it is the most beautiful of all Orchids. Large specimens of it are remarkably handsome, producing as many as twenty scapes of fragrant flowers, to the rich hues of which no artist can do justice. Native of Guatemala and Mexico. It first flowered in this country in 1834.

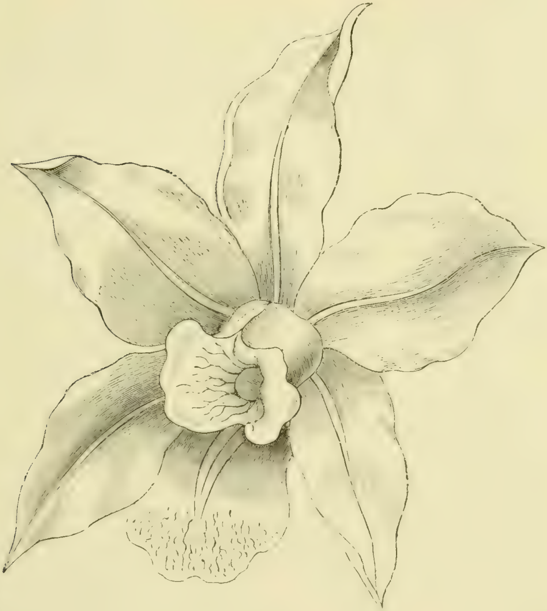


Fig. 65. Flower of Lælia anceps
(nat. size).

Fig. 65; Botanical Magazine, t. 3804.

The varieties of this Orchid are now numerous. The following are the principal:

Var. *Amesiana.*—Very similar to var. Dawsoni.

Var. *Barkeriana.*—Sepals and petals narrow; lip deep purple.

Var. *Dawsoni.*—A beautiful variety, at present very rare; sepals and petals of a pure waxy white, the side lobes of the lip white, and the centre one purple, streaked with lines of a deeper purple.

Var. *Sanderiana.*—Flowers like those of Dawsoni, but smaller.

Var. *virginalis* (*alba*).—Flowers pure white, except only a yellow blotch on the lip.

Var. *Warneri.*—Sepals and petals light soft rose; lip of an intense rich crimson. This flowers in June and July.

Var. *Williamsii.*—Flowers large, pure white, save a yellow blotch and some radiating, purple streaks on the lip.

L. autumnalis.—Although to some extent resembling L. anceps, this species is abundantly distinct. The pseudobulbs are ovate, ribbed, tapering to the apex, 6in. long, and bear two, or sometimes three, leaves, which are lance-shaped, 6in. long, and bright green. The scape is 2ft. or more high, rather stout, three- to six-flowered; the sepals and petals are oblong-lanceolate, waved at the edges, both being of a beautiful rose-purple; the lip is three-lobed, rosy white, with a yellow centre and purple apex. This and its varieties take rank with the most select of all Lælias. They grow and flower freely under the treatment advised for the Mexican species. The fragrant and lasting flowers are of exceptional value owing to their expanding in October and November. In Mexico this Orchid is known as the "All Saints' Flower." Introduced in 1836. Botanical Magazine, t. 3817.

Var. *atrorubens.*—Flowers very large, deep crimson, paler towards the centre.

Var. *venusta.*—Flowers large, rosy mauve.

L. cinnabarina. — A graceful Orchid, in which the pseudo-bulbs are narrow, swollen at the base, or flask-shaped, dark green, 6in. to 10in. long, bearing usually a single erect, dark green leaf of the same length. The scape is erect, 15in. to 20in. long, and many-flowered; the sepals and petals are narrow, and, as well as the lip, of a deep red-orange colour, to which the species owes its name. Each flower is about 2½in. across. Pot-culture suits this species best. It blossoms during spring and early summer, the flowers lasting about six weeks. It is a most ornamental plant, and is easily grown and flowered under ordinary Cattleya treatment. It was introduced from Brazil in 1836.

Botanical Magazine, t. 4302.

L. crispa.—An old, easily-grown, ornamental species, interesting on account of its being one of the parents of some of the best garden hybrids. It has stout, clavate pseudo-bulbs, from 7in. to 10in. long, flattened, furrowed, and one-leaved. The leaf is stout, 1ft. long, rounded at the apex. The spike bears from four to seven flowers, which are about 5in. across; sepals white, lanceolate, 3in. long; petals broader, white, wavy and crisped along the margins; lip three-lobed, the side lobes folding over the column, white outside, yellow and purple inside, and the front lobe oblong, wavy, pointed, and coloured amethyst-purple, with veins of a deeper shade; there is also a blotch of purple in the throat. This species was one of the first introduced Lælias, having been cultivated at Chiswick in 1826, whither it was sent from Rio de Janeiro by Sir Henry Chamberlain. It blossoms in early autumn, and requires similar treatment to Cattleya Mossiæ. Syn. *Cattleya crispa.*

Botanical Magazine, t. 3912.

There are several named varieties of this species, the most marked being *Buchanan's*, *delicatissima*, and *purpurea*.

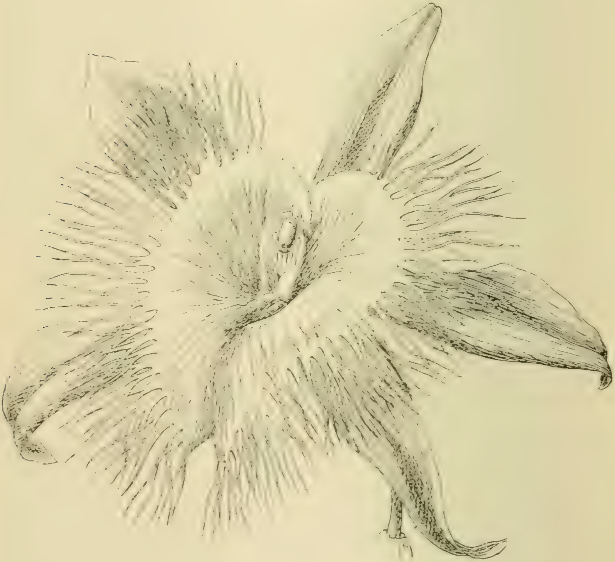


Fig. 66. Flower of Lælia Digbyana
(⅔ nat. size).

L. Digbyana.—This remarkable plant has until recently been known as *Brassavola Digbyana.* It has short, compressed, sheathed, one-leaved pseudo-bulbs, the leaves thick, fleshy, grey-green, 6in. long. Flowers borne singly on each pseudo-bulb, 5in. across; sepals and petals equal, narrow, pale yellow; lip heart-shaped, the sides folding, the margin fimbriated, colour cream-white. The flowers are produced in July and August. When growing, this plant should be placed near the roof-glass in a stove, and be ripened and rested in an intermediate house. Introduced from Honduras in 1846.

Fig. 66; Botanical Magazine, t. 4474.

L. Dormaniana.—A small species, the pseudo-bulbs being no thicker than a goose-quill, about 9in. high, the base swollen. Leaves two or three, about 4in. long. Flowers in spikes of three or more, each 3in. across; sepals and petals similar, narrow, olive-brown, veined with purple; side lobes of lip pale purple, the front lobe short, deep purple. A dusky-flowered little plant, which was introduced from Brazil in 1879. It requires ordinary Cattleya treatment, and flowers in spring.

L. elegans.—This is a tall-growing species, much resembling Cattleya guttata in growth. The pseudo-bulbs are 1ft. or more long, slender, and stem-like, bearing usually a pair of spreading, leathery, dark green leaves, 8in. to 12in. long. The scape is erect, bearing three to six or more flowers; the sepals and petals are equal, white or rose, varying to carmine; and the lip is a deep rich purple. Pot-culture suits this plant best; in fact, it requires exactly the same treatment as that recommended for Cattleyas. It blooms from May to September, and is a native of Brazil. The type and the numerous varieties are easily grown, and flower every year. The flowers usually measure about 6in. across, are of good substance, and last a long time in perfection.

Botanical Magazine, t. 4700.

The following are the best of the named varieties :

Var. *alba*.—Flowers white, with a faint flush of purple ; middle lobe of lip rich shining purple, with white lines.

Var. *gigantea*.—Flowers white, suffused and spotted with rose-lilac ; lip deep violet-rose ; throat white.

Var. *prasiata*.—Flowers rose, with a greenish tinge ; lip white on the folding sides, the front magenta-crimson.

Var. *Schilleriana*.—Flowers as in var. alba ; throat yellow.

Var. *Turneri*.—Flowers amethyst-purple ; folding sides of lip white and rose, front maroon-crimson.

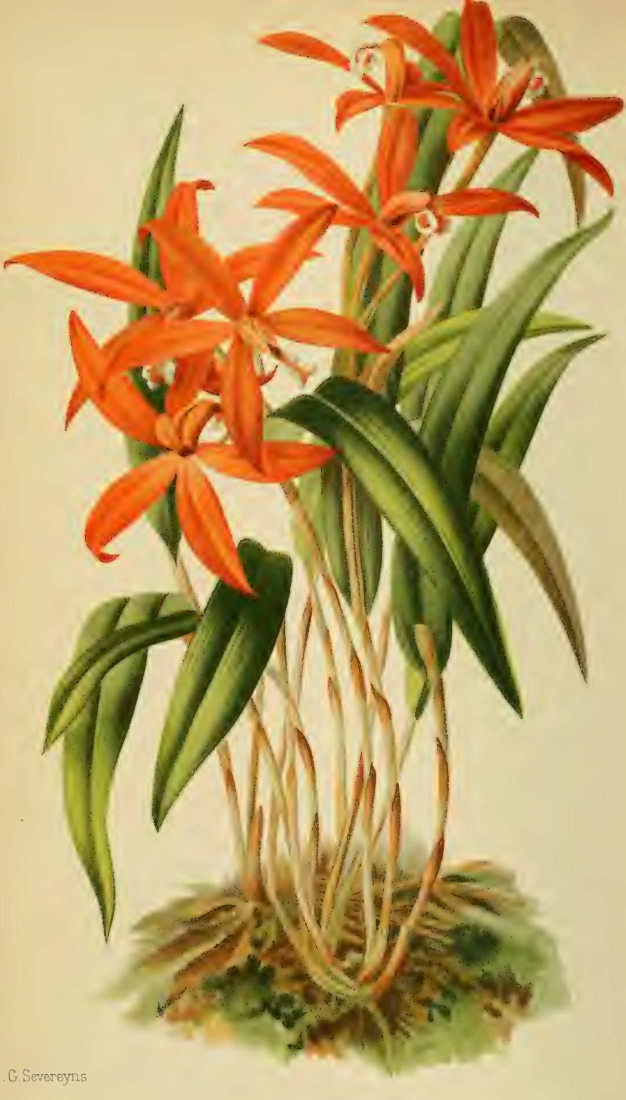
L. flava.—A rare and pretty species with cylindrical pseudo-bulbs, similar to L. cinnabarina in general habit, but usually shorter in the pseudo-bulb. Peduncles erect, 1ft. to 1½ft. long, three- to nine-flowered; sepals and petals similar, lance-shaped, and falcate ; lip narrow, recurved, and crisped at the edge ; the colour of the whole flower is a uniform golden yellow. Introduced from Minas Geraes in 1839. Its cultural requirements are the same as for Cattleyas. The flowers are developed in late autumn.

Botanical Register, 1842, t. 62.

L. furfuracea. — Pseudo-bulbs and habit as in L. autumnalis, but smaller. Peduncles 6in. long, bearing one, two, or three flowers, which are each 5in. across ; petals broader than the sepals, pale purple ; side lobes of lip rounded ; front lobe oblong, bright purple. This is not easily kept in health, rarely lasting more than four years under cultivation. Being a native of Oaxaca, in Mexico, it requires the treatment recommended above for the Mexican species. It flowers in autumn. Introduced in 1838.

Botanical Magazine, t. 3810.

L. grandis.—A remarkable species, and one which is rarely met with. Pseudo-bulbs as in Cattleya labiata,



th. G. Severeyns

LÆLIA HARPOPHYLLA

REDUCED

one-leaved, the leaf 8in. to 10in. long. Peduncles erect, three- to five-flowered; flowers 4in. across; petals broader than the sepals, both wavy and spreading, and coloured tawny yellow; lip tube-shaped at base, white on the sides, the front lobe rounded, white, veined with purple. Introduced from Brazil in 1849. The cultural requirements of this species can only be supplied in a hot, moist stove during the growing season (May to August), and in an intermediate house for the resting season. The flowers are produced in spring.

Botanical Magazine, t. 5553.

L. harpophylla.—A distinct plant, the pseudo-bulbs being very slender, tufted, erect, 1ft. or more high, and one-leaved. Leaf narrow, pointed, 6in. to 8in. long. Peduncles from four- to seven-flowered; flowers about 3in. across; sepals and petals equal, narrow, spreading, star-like; lip small, the sides folding, the front curling right back, and crisped on the margin; colour of the whole flower a bright cinnabar-red, with a whitish margin to the lip. The blossoms are produced in April and May. This is an easily-managed plant, as it grows freely in a warm greenhouse, and rarely fails to flower profusely. It is one of the brightest and most attractive of all Orchids when in blossom. Introduced from Brazil (?) in 1865, and not again till about 1883.

Coloured Plate; Williams' Orchid Album, iii., t. 117.

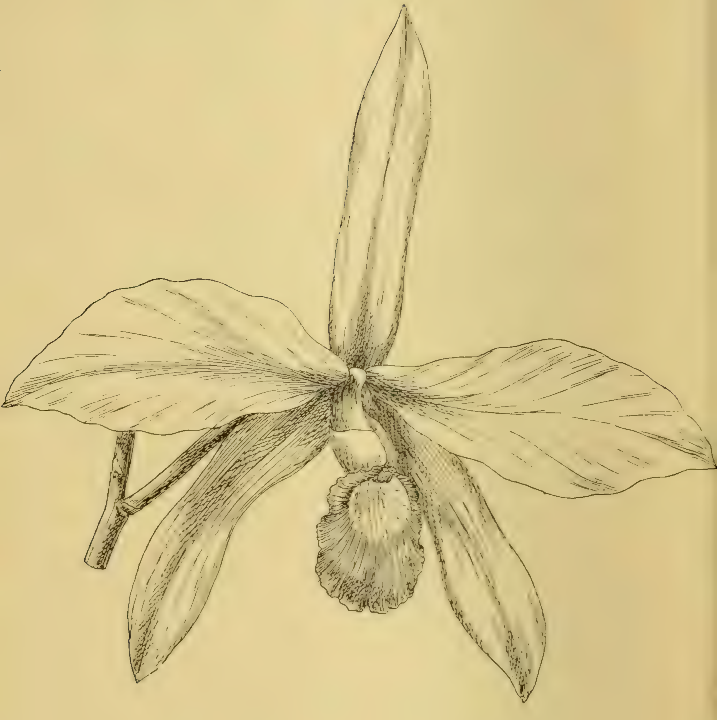
L. Jongheana.—A distinct, pretty, and very rare plant, existing in only a few collections. Pseudo-bulbs egg-shaped, compressed, 2in. long, one-leaved. Leaf 4in. long, erect. Peduncle as long as the leaves, one-flowered; flowers 5in. across, flat, rose-purple; petals broader than the sepals, lance-shaped; lip oblong, with triangular side lobes, the front lobe rounded, the margin crisped, yellow and white in the throat. Flowering season, March or April. Introduced from Brazil in 1854.

Botanical Magazine, t. 6038.

L. lobata.—A robust plant. Pseudo-bulbs spindle-shaped, compressed, about 6in. long, one-leaved. Leaf 8in. to 10in. long, leathery. Scapes two- to five-flowered; flowers 5in. across; sepals narrow, with reflexed margins; petals broad, wavy, with crisped margins; lip folding at the sides, spreading and curved in front, wavy at the margin, and coloured rich purple, with lilac veins, the rest of the flower being rosy lilac. A handsome-flowered kind, which thrives under the treatment recommended for Cattleyas, with the addition of all the sunlight possible all the year round, otherwise the flowers are apt to fail. It blossoms in April and May. Introduced in 1847 from Rio de Janeiro, where it grows high upon bare rocks that are washed by the ocean below, and where it is fully exposed to the sun from morning till night. Syns. *L. Boothiana, L. Rivieri*, *Cattleya lobata.*

Revue Horticole, 1874, p. 33.

L. majalis.—This is a dwarf-growing plant, succeeding best when grown upon a block; it ranks amongst the most beautiful of the genus, and is called in its native country "Flor de Majo," or May Flower, in allusion to its season of flowering. The pseudo-bulbs are clustered, egg-shaped, pale green, wrinkled when old, bearing usually a single leaf, 6in. long. The scape bears a single large flower, 6in. across; the sepals are lance-shaped; the petals are broad, soft rose in colour; the lip is very large, rose-lilac, streaked and dotted with purple. It blossoms during the early summer, but is somewhat difficult to flower. It was discovered and roughly figured by Hernandez as long ago as 1615; he gives its native



FLOWER OF LÆLIA PERRINII

($\frac{2}{3}$ nat. size).

name as "Chichilitic Tepetlavhxochitl"! For cultural details, see the beginning of the present chapter. It was introduced from Mexico about 1838.

Botanical Magazine, t. 5667.

L. monophylla.—This is the smallest of all Lælias, the whole plant being scarcely 6in. high, and the flowers less than 2in. across. Nevertheless it is a charming little Orchid. The pseudo-bulbs are scarcely thicker than a knitting-needle, 3in. to 5in. long. Leaves 2in. long. Scape as long as the leaf, one-flowered; flower vivid orange-scarlet, with a purple, eye-like anther-cap; sepals and petals similar; lip very small. Known in a wild state only in Jamaica, at an elevation of 5000ft., whence it was introduced to Kew, and flowered in 1882. It thrives best when planted in a small pan, and suspended near the glass with the Odontoglossums, or in an ordinary greenhouse. It blossoms in autumn.

Botanical Magazine, t. 6683.

L. Perrinii. — This is an elegant, autumn-flowering species. The pseudo-bulbs are stout, 6in. to 9in. high, compressed, and bear each a single dark green leaf of the same length. The scape is erect, bearing from three to six flowers, which are 5in. across and curiously flattened; the sepals and petals are rosy purple, tipped with purplish magenta, and the lip is pale purple on the small side lobes; the front lobe reflexed, pointed, rich purple, with a yellow blotch in the throat. It is a native of the Organ Mountains and various parts of Brazil.

Plate; Botanical Register, 1828, t. 2.

Var. *nivea* (sometimes called *alba*).—Flowers white, the front of the lip rose-purple.

L. pumila.—A dwarf, compact-growing species. Pseudo-bulbs thin, round, 2in. to 3in. long, one-leaved. Leaf oblong, the same length as the pseudo-bulbs. Peduncles short, one-flowered; flowers 4in. across; sepals lance-shaped; petals ovate, 1in. broad; lip folding over at the sides, spreading in front, where it is 1in. across; colour of whole flower rose-purple, front of lip maroon-purple, paler in the centre of the middle lobe; throat with three to five parallel ridges. The flowers are developed in September or October, and remain good two weeks or more. Syns. *Cattleya marginata*, *C. Pinelii*, *C. pumila*, *C. spectabilis.*

Botanical Magazine, t. 3656.

The following are now considered to be only varieties of *L. pumila*, though formerly they ranked as distinct species:

Var. *Dayana.*—Flowers deeper in colour, and appearing earlier, than in the type; throat of lip white, with raised, purple lines; front wholly purple.

Var. *præstans.*—Flowers of the same colour as those of the type; lip trumpet-shaped, and stiff in texture; throat orange-yellow.

The type, as well as the varieties, should be cultivated in shallow pans, or teak baskets, which should be partly filled with drainage, filling up with peat-fibre and a little sphagnum. During the growing season the plants should have plenty of water, and at all times the compost should be kept moist. The best position for the plants is near the roof-glass in a warm, moist greenhouse. Introduced from Brazil in 1838.

L. purpurata.—This is one of the grandest Lælias in cultivation. It is a robust-growing plant, producing large, spindle-shaped, compressed pseudo-bulbs, each bearing a broad, leathery, dark green leaf 1ft. or more long. The scape is erect, and from three- to seven-flowered; the flowers are very large, sometimes as much as 8in. in diameter, the sepals and petals being narrow at the base, broader in the upper half, white, tinted and streaked with rose-purple; the lip is also very large, sometimes as much as 3in. in length, broad, and spreading in front, the margin crisped; colour rich purple, veined with a deeper shade; throat pale yellow, with purple lines. The plant flowers during the spring and early summer, and is a native of Brazil.

Paxton's Flower Garden, iii. 96.

Many varieties of this are now cultivated; the best of them are here given:

Var. *Brysiana.*—Sepals and petals tinged with rose-lilac; lip deep purple.

Var. *Russeliana.*—Sepals and petals white, tinted with lilac; lip rose-lilac, with veins of purple.

Var. *Schrœderi.*—Sepals and petals white; front of lip mauve-purple, bordered with white.

L. rubescens.—A small plant, with compressed, ovoid pseudo-bulbs, 1in. to 2in. long, one-leaved. Leaf oblong, 4in. in length, leathery. Scape slender, 1ft. long, jointed, four- to seven-flowered; flowers 2½in. across, full; petals and sepals nearly equal, white or rose-lilac; lip short, with a rather large front lobe, which is lilac, with a blotch of purple in the throat. Introduced in 1840. A native of Southern Mexico and Guatemala, where it is known as the "Flor de Jesus." It blooms in November and December, and should be cultivated as advised for the Mexican species. Syns. *L. acuminata, L. peduncularis.*

Botanical Magazine, tt. 4099 and 4905.

Var. *alba.*—Flowers white, with a yellow blotch on lip.

Var. *rosea.*—Flowers mauve; lip blotched with maroon.

L. superbiens.—A fine, strong-growing species, the pseudo-bulbs of which are 1ft. or more long, and stout, bearing thick and leathery, rather light green leaves, which are as long as the pseudo-bulbs. The spike attains a height of about 5ft., bearing from ten to twenty flowers near the apex; these are 6in. across; the sepals and petals are similar, coloured rich rose, and tinged with lilac, and the lip is deep crimson-purple, striped with yellow. This species blossoms during the winter months. It was introduced from Guatemala about 1840. Mr. G. Ure Skinner, who was the first to discover it, says he found it growing on rocks. Some of the plants had pseudo-bulbs 22in. long, and flower-stems 4yds. in length, bearing twenty flowers or more each. The Indians call it "The Wand of St. Joseph." This gigantic Lælia will be found to thrive best when grown in the warm end of the Cattleya-house.

Botanical Magazine, t. 4090.

L. xanthina.—A second-rate species, with the habit of a Cattleya Trianæ, and flowers 3in. across, their colour being buff-yellow except the front of the lip, which is white, streaked with crimson-purple. A native of Brazil, whence it was introduced in 1858.

Botanical Magazine, t. 5144.

Supposed Natural Hybrids.

The following hybrids are supposed to have originated by the crossing of species in a wild state.

L. amanda (supposed parents *Cattleya intermedia* and *Lælia crispa*).—Flowers 4in. across, pale rose-purple; lip deep amethyst-purple.

L. Crawshayana (from *L. anceps* and *L. autumnalis*).—Flowers pale rose-purple; lip deep purple, with a yellow throat.

L. euspatha (from *L. purpurata* and *Cattleya intermedia*).—Flowers white, tinted with rose; lip deep purple, pale at the margin, where the veins are purple.

L. Leeana (parentage uncertain).—Plant like *L. pumila*. Flowers rose-purple; lip magenta-purple.

L. lilacina (from *L. crispa* and *L. Perrinii*).—Flowers pale lilac; lip white, with purple blotches.

L. porphyritis (from *L. pumila* and *L. Dormaniana*).—Flowers pale purple; front of lip rich purple, with a yellow disc.

L. Wyattiana (from *L. crispa* and *L. lobata*).—Flowers white; lip pale purple, with deep purple veins.

Garden Hybrids.

As in the case of Cattleyas, there are now numerous hybrid Lælias which have been raised in gardens. They are as follows:

NAMES OF HYBRIDS.	RAISED FROM
L. Amesiana . .	L. crispa and Cattleya maxima.
L. bella	L. purpurata and Cattleya labiata vera.
L. callistoglossa .	L. purpurata and Cattleya gigas.
L. caloglossa . .	L. crispa and Cattleya labiata vera.
L. Canhamiana .	L. purpurata and Cattleya Mossiæ.
L. Dominiana . .	(Parentage not recorded.)
L. exoniensis . .	L. crispa and L. purpurata.
L. felix	L. crispa and Cattleya Schilleriana.
L. flammea . . .	L. cinnabarina and L. Pilcheri.
L. Philbrickiana .	L. elegans and Cattleya Acklandiæ.
L. Pilcheri . . .	L. crispa and L. Perrinii.
L. Sedeni . . .	L. elegans and Cattleya superba.
L. triophthalma .	L. exoniensis and Cattleya superba.
L. Veitchiana . .	L. crispa and Cattleya labiata vera.

L. Batemaniana.—This is one of the most remarkable of all hybrid Orchids. It was raised by Messrs. Veitch and Sons, and is the result of crossing Sophronitis grandiflora with Cattleya intermedia. The pseudo-bulbs are 3in. long, one-leaved; the leaf is of the same length. Flowers 3in. in diameter; sepals and petals similar, rose-coloured, toned with scarlet; lip large, with three distinct lobes, the front one the smallest; colour lilac and deep purple. Flowered for the first time in 1886. Syn. *Sophrocattleya Batemaniana.*

It may be observed that Professor Reichenbach calls this plant Lælia, because in his opinion *Sophronitis grandiflora* is now proved to be a true *Lælia*, and not a *Sophronitis.*

Journal of Horticulture, 1887 (ii.), p. 55.

L. Digbyana-Mossiæ.—This interesting and very beautiful hybrid was raised by Messrs. Veitch, its parents being Cattleya Mossiæ and the old Brassavola Digbyana, now reduced to Lælia. The flowers are over 6in. in diameter, with sepals ¾in. across, and petals twice as broad, with wavy, crisped edges. The labellum is 3in. in diameter, nearly circular in outline, spreading, with the margin broken up into a deep fringe of a delicate, lace-like character. The whole flower is rosy mauve, with streaks of crimson and a yellow blotch on the labellum. Flowered in 1889, when it was awarded a silver medal by the Royal Horticultural Society.

Gardeners' Chronicle, May, 1889, fig. 111.

CHAPTER XXXVI.

LISSOCHILUS.

About thirty species of terrestrial Orchids, several of them decidedly handsome and distinct in character, are comprised in this genus. The pseudo-bulbs are fleshy when young, hard and almost woody when old; they are usually underground. The leaves are more or less lance-shaped, with prominent, longitudinal nerves. The flowers are borne on long, stout, many-flowered scapes, springing from the side of the pseudo-bulbs. A distinguishing character of the flower is the dissimilarity of the sepals and petals—the latter being much larger, and generally different in colour. The lip is saccate, and is joined to the base of the column. All the species are native of Southern and tropical Africa.

Culture.—These plants are most successfully grown in pans, in a compost of fibrous loam, leaf-soil, and a little coarse silver sand. When in full growth, they must be freely supplied with water; but in order to insure flowering it is necessary in winter to keep them dry for about three months. During active growth, weak manure-water may be given at intervals of a week or a fortnight. The species here described may, with the exception of L. giganteus, be grown with the Cattleyas. The cultivation of L. giganteus, of which but few plants are at present introduced, is less understood. Naturally, it grows on the banks of the River Congo, in shallow pools and marshy places; in the dry season, however, the soil becomes parched, and it receives a thorough baking. From this we may infer that during activity the plants should be given the moistest, hottest position in the stove—the soil being kept saturated. As growth ceases, water must be given more and more sparingly, always remembering to proportion the length of the resting period to the vigour of the plants and their growth during the previous season.

L. giganteus.—This remarkable and beautiful plant is one of the giants of the Orchid family. Travellers state that in its native country its leaves reach a length of 8ft., and its flower-spikes a height of 16ft. The first plant that flowered in England was in the possession of Sir Trevor Lawrence. The leaves of this plant were plaited, about 4ft. long by 4in. wide, and pointed at the tips. The flower-spike was 8ft. 8in. high, and towards the top about fifteen flowers were somewhat loosely arranged. The flowers are from 3in. to 4in. across; the greenish sepals are strap-shaped, and curl back towards the ovary; the petals, which are broadly oblong, and over 1½in. in diameter, form a kind of hood over the lip, and are of a pinkish-rose colour. The lip is 3in. long, trowel-shaped in front, narrowing at the base into a pointed spur, which stands out behind the rest of the flower; it is purple, striped with darker lines, and marked on the centre with three yellow lines. This species was discovered by Dr. Welwitzsch, in 1866, on the banks of the River Congo; it first flowered under cultivation in May, 1888.

Gardeners' Chronicle, iii. (1888), fig. 83.

L. Horsfallii.—A very fine species, of stately habit, with plaited, lance-shaped leaves, 2ft. to 3ft. in length, and 4in. to 6in. in breadth. The strikingly handsome flowers are 3in. in diameter, and are densely arranged on the upper part of an erect scape over 4ft. long. The undulated, reflexed sepals are of a rich purplish brown, beautifully contrasting with which are the much larger, rosy-white petals. The three-lobed lip is purplish at the base, the erect side lobes being green, with purplish streaks, and the middle lobe of a rich purple, with three white lines down to the base. A native of Old Calabar; introduced in 1865.

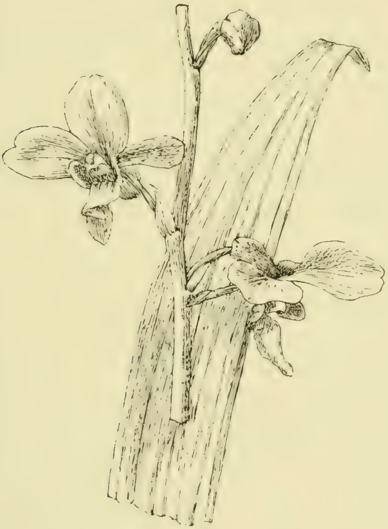


Fig. 67. Flowers and Portion of Leaf of Lissochilus Krebsii
(½ nat. size).

Botanical Magazine, t. 5486.

L. Krebsii.—On account of the distinct character of its flowers, and the length of time they remain in perfection, this is a useful and desirable garden Orchid. The pseudobulbs are green, 2in. to 3in. high, and bear lance-shaped, plaited, bright green leaves, 8in. to 12in. long. The flower-scape is 1½ft. to 2ft. high, and from the upper portion it produces from twenty to thirty flowers, each measuring 2in. across; the sepals are greenish brown, blotched with dull purple, and the petals, which are three or four times as large, are of a bright golden yellow. The lip is three-lobed, the side lobes being erect and similar in colour to the sepals; the middle lobe is nearly orbicular, notched in front, and of a pale golden yellow. Introduced from Natal in 1867. It flowers from May to October.

Fig. 67; Botanical Magazine, t. 5861.

L. speciosus.—This is an old and ornamental species, with roundish, underground pseudo-bulbs, and stout, sword-shaped, dark green leaves. The flower-scape is erect, from 2ft. to 4ft. high; the flowers, which are 2in. in diameter, and fragrant, being confined to the upper half. The green sepals are small and reflexed; the petals are oblong, much larger than the sepals, and of a bright yellow. The lip is about 1in. long, mainly yellow, but at the base is white, veined with purple. In this species the flowers are inverted, the lip being uppermost. A flower-scape will continue blossoming for two months, being in full beauty in June and July. Introduced from the Cape of Good Hope in 1818.

Botanical Register, t. 578.

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CHAPTER XXXVII.

LYCASTE.

Every amateur's collection should include representatives of this genus, all the species being of easy culture, and noted for their free-flowering qualities. They have short, thick pseudo-bulbs, varying in different species from 1½in. to 6in. in height. The leaves are two to four in number, plaited, acuminate, and being of a bright shining green, and firm in texture, the plants, even when not in flower, have a handsome and luxuriant appearance. The flower-scapes, which are generally numerous, spring from the base of the pseudo-bulbs, and usually carry a single flower; in vigorous specimens, however, twin-flowered scapes are not unusual. The flowers are large, and, although somewhat stiff in appearance, they are very handsome; the sepals are erect, the dissimilar petals folding more or less forward over the column; the lip is three-lobed, the middle lobe being furnished with a transverse fleshy appendage. The flowers remain fresh on the plants for several weeks; they are also useful for cutting. There are upwards of thirty species in cultivation, all of which are natives of tropical America and the West Indies. By growing the selection given below, Lycastes may be had in flower nine or ten months out of the year.

Culture.—We recommend these plants to the beginner in Orchid-culture, because there are none more likely to give satisfaction. They require but little heat, and may be successfully grown with the cooler Odontoglossums. They should be planted in well-drained pots or pans; a compost of fibry peat and chopped sphagnum, with a dash of silver-sand, will be found to suit them admirably. Copious supplies of water must be afforded during the period of active growth, and, although the amount should be reduced in winter, in accordance with the lessened amount of sunshine, the plants should at no time be allowed to get dry at the root. Lycastes are amongst the best of Orchids for sitting-room decoration, lasting, as they do, longer in perfection, and suffering less in health, than almost any others.

L. aromatica.—This species is chiefly desirable on account of the aromatic odour of its flowers, which are produced in great profusion, and measure 3in. across. The pseudo-bulbs are about 2in. high, and are compressed, bearing on the apices the broadly lance-shaped, plaited leaves. The one-flowered scapes are slender, erect, and about 4in. in length. The sepals and petals are of a pretty golden yellow, with a greenish tinge on the outer side. The lip is three-lobed, and, by the side lobes curving upwards, is made to assume a somewhat cylindrical shape; it is hairy, and is marked on the inner side with orange-coloured spots. This Orchid flowers in June and July, and lasts in beauty over a month. It is a native of Mexico; introduced in 1828. Syn. *Maxillaria aromatica.*

Botanical Register, t. 1871.

L. Deppei.—This old and well-known species, though not much grown, is one of the most useful of its kind, and, on account of its free-flowering character, deserves to be in every collection. The pseudo-bulbs and leaves are similar to those of L. aromatica, but are slightly more robust. The flowers are 4in. across, the sepals being oblong, and green, marked with tranverse lines of brownish-purple spots; the petals are pure white, and not so large as the sepals; the hood-shaped lip is yellow, marked with crimson dots. This species flowers at various periods, but generally during the spring and summer. Introduced from South Mexico in 1828. Syn. *Maxillaria Deppei.*

Botanical Magazine, t. 3395.

Var. *punctatissima* has larger flowers, with greenish-white sepals and petals profusely spotted with purple; and the lip is blotched and streaked with dark purple. A native of Guatemala.

L. Harrisoniæ.—This species, which differs much in habit from the others here grouped under Lycaste, has been placed by Reichenbach in another genus, *Bifrenaria*: it is, however, so generally known as a Lycaste that we prefer to retain it here. The pseudo-bulbs are 3in. to 4in. high, four-sided, and taper towards the top, whence is produced the solitary, plaited, lance-shaped leaf. The scape is one- or two-flowered, each flower being from 2in. to 3in. across. The sepals and petals are creamy white, and of rather fleshy texture; the lip is purple in front, yellowish at the base, and marked on the inner side with red lines. The flowers last a very long time in beauty. They turn to a dark yellow colour with age. Introduced from Brazil in 1828. Syns. *Bifrenaria Harrisoniæ*, *Maxillaria Harrisoniæ.*

Botanical Magazine, t. 2927.

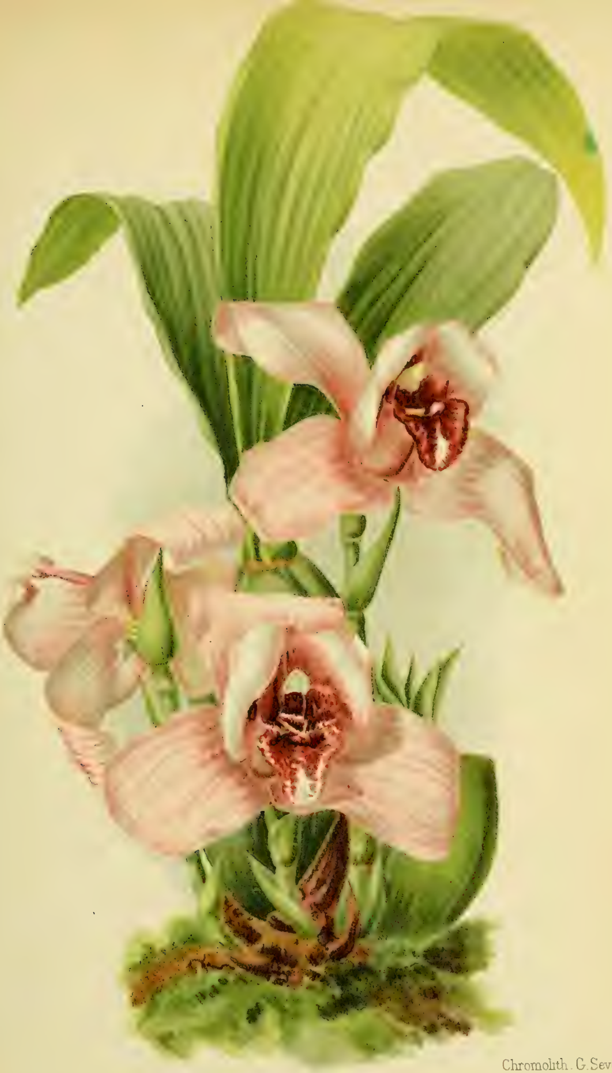
Var. *citrina* has sepals and petals of a pale lemon-colour, and a white lip, stained with lilac.

Var. *grandiflora* has the whole of the lip purple, except at the margin, which is yellowish; the spur is yellow, striped with purple.

L. plana.—This is a robust and ornamental species, with large, ribbed pseudo-bulbs, and pointed, oval leaves. The flowers are from 3in. to 4in. across, the oblong sepals being of a pretty madder-red; the petals, which are smaller, and recurved at the tips, are white, marked with a crimson-coloured blotch; the lip is still smaller, white, spotted with rosy crimson. This species was introduced from Bolivia about 1840; it flowers during the winter months.

Botanical Register, 1843, t. 35.

L. Skinneri.—In every way this species is certainly one of the most desirable of all Orchids. It is one of the easiest to grow, and, if treated in a proper manner, never fails to reward the grower with an abundance of flowers. Moreover, it may be purchased at a price within the means of all. The pseudo-bulbs are oblong, 3in. to 5in. high, and bear two or three broadly lance-shaped, dark green, plaited leaves. The flowers are large and strikingly handsome, and we have seen a single pseudo-bulb produce as many as sixteen of them, each from 5in. to 6in. in diameter. The scapes are one-flowered, and spring from the base of the pseudo-bulb. The flowers are very variable in colour; indeed, it is difficult to get two plants with flowers exactly alike. The oblong, pointed sepals are typically of a blush-white, but in other forms deepen in colour to bright rose, and even to a deep mauve. The petals stand forward at each side of the column; they are about half the size of the sepals, and are usually of a deep rose-colour. The three-lobed lip is white, spotted with crimson. This species flowers from November to May, the blossoms lasting several weeks



Chromolith. G. Severeyns

LYCASTE SKINNERI

REDUCED

in perfection. It is a good plan during the summer months to give the plants a watering with a weak solution of cow-manure about every seven days. Such treatment materially adds to the vigour of the growths and to the subsequent floriferousness of the plants. A native of Guatemala; introduced in 1842.

Coloured plate; Fig. 68; Botanical Magazine, t. 4445.

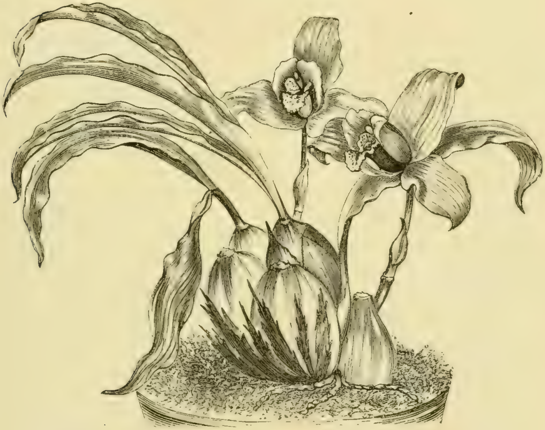


Fig. 68. Lycaste Skinneri
(much reduced).

There are numerous named forms of this species in gardens; of these the most distinct are here described.

Var. *alba.*—A rare, and at present an expensive Orchid. Its beautiful flowers are of the usual size, but wholly of a pure white, except on the centre of the lip, where they are faintly tinged with yellow.

Var. *nigro-rubra* has flowers over 6in. in diameter, and is one of the deepest-coloured forms. The sepals are deep mauve, the petals rich purple, and the lip rosy purple.

L. tetragona.—An interesting plant, very remarkable in the colour of its flowers. In habit, pseudo-bulbs, and leaves, it is similar to the well-known L. Harrisoniæ. The flowers also resemble those of that plant, except in colour and substance. Scapes short, three-flowered; sepals and petals broad-ovate, pointed, green, with lines and blotches of chestnut; lip hollow, fleshy, white, with blotches of crimson near the tip, outside, purple within. The flowers remain fresh for nearly two months, and are very fragrant. Introduced from Brazil in 1827, and flowered at Kew in 1829. Syn. *Maxillaria tetragona.*

Botanical Magazine, t. 3146.

L. tricolor.—This species is at present very rare and little known in our gardens; it is, however, one of the most beautiful and floriferous of Lycastes. It has ovate, compressed pseudo-bulbs, about 2in. high, bearing two or three deep green, lance-shaped leaves. The flower-scapes, as in the other species, are clustered round the base of the pseudo-bulbs, and each bears a single flower, 3in. in diameter; the spreading, pale brown sepals are oblong, pointed, and slightly recurved; the rose-coloured petals are smaller than the sepals, and broader towards the apex; the lip is still smaller, toothed at the margin, and of a deep rose-colour. This species is represented at Kew by good-sized plants, which every year flower profusely from June to August. It is a native of Guatemala.

CHAPTER XXXVIII.

MASDEVALLIA.

A LARGE number of terrestrial Orchids peculiar to tropical America, and especially numerous in New Grenada, are included in this genus. Probably 150 species have been described, and new additions are constantly being made. Although a large proportion of the species are wanting in size of flower and colour attraction, yet, owing to the very singular, often grotesque, forms assumed by the flowers, many of them are in cultivation in the gardens of at least a few specialists. At Kew the number of species cultivated at present is 84. Sir Trevor Lawrence, Bart., M.P., the Marquis of Lothian, and Mr. Sydney Courtauld, have been for some time famous for the number of Masdevallias in their collections. In the Botanical Gardens at Glasnevin there is also a well-cultivated and rich collection of these plants. It will give some idea of the remarkable attraction Masdevallias have for amateurs when we state that the Marquis of Lothian is now preparing for publication an illustrated monograph of this genus. This work will contain coloured plates of about a hundred species of Masdevallia, and will be published in ten parts of royal folio, the price being £20.

All the species of Masdevallia have a tufted habit, green, strap-shaped or spoon-shaped leaves, and flowers in which the sepals are much more conspicuous than the petals and lip, these latter organs being often entirely hidden in the tube formed by the union of the sepals at the base. The variety of form and arrangement shown in the sepals of these plants is probably unequalled in any other genus of Orchids. The section represented by M. Chimæra is, as the name denotes, most fantastic—"devilish, dog-fish like, a floral octopus"—in flower-character; the simple shape of M. Harryana, M. ignea, and all of that section, is insignificant in comparison with their colour-brilliancy; whilst in the jewel-like flowers of the tiny species, such as M. tridactylites and M. triglochin, there is great beauty of structure, as well as of colour. In 1865 there were scarcely half-a-dozen species known in gardens; then came the snowy M. tovarensis, followed by the flame-coloured M. Veitchiana, and the popularity of Masdevallias was at once ensured.

One has to know these plants to understand the fascination they have for horticulturists. They grow on one until the desire for them becomes almost a mild species of madness. Amongst the many charms which Masdevallias possess must be reckoned one which, till recently, was scarcely known to exist in the great Orchid family, namely, sensitiveness, such as is possessed by the Venus' Fly-trap and the Sensitive Plant. At Kew, in 1887, a small plant of M. muscosa flowered for the first time in England. It had short, thick leaves, erect, hairy flower-scapes, and flowers ½in. across; the lip was hinged, and had a concave blade, ¼in. long, in the middle of which was a raised, yellow disk. On touching this disk, the lip moved upwards and closed with a jerk, and it was found that any small insect on alighting on the lip was at once trapped and held for about twenty minutes, when the lip opened again. Charles Darwin, who regretted never having seen a sensitive Orchid, would have been delighted had he seen this plant.

Culture.—The details of cultivation for most of the species described here are given under three representative kinds, viz., M. Chimæra, M. Harryana, and M. Shuttleworthii. To these the reader is referred for instructions on the treatment of the plants. All of them require a moist atmosphere all the year round, with moisture always at the root; whilst in summer the soil should never be allowed to approach dryness. In an establishment where a large number of kinds are grown, a house is devoted specially to them. The aspect of this house is north, with a view to summer coolness and shade, and it is so constructed as to admit of abundant ventilation without drying-up the atmosphere. In summer the house must be kept quite cool, whilst in winter the temperature should be: day, 50deg. to 55deg.; night, 48deg. for the coolest species. Those requiring a little more warmth, such as M. Chimæra, should be kept at a temperature 5deg. higher than this. Green fly sometimes attacks these plants: it should be removed with a sponge and soapy water, or by dipping the plants in a solution of tobacco and soft soap. Masdevallias cannot bear tobacco fumigation. The species enumerated here are the best of those known in cultivation. They are, with few exceptions, easily obtained, being plentiful in dealers' collections.

M. amabilis.—A graceful species, forming tufts of erect, fleshy, green leaves, 5in. long and ¾in. across, the apex recurved and acute-pointed, the base narrowed to a stalk. Scape 9in. long, erect, one-flowered; tube ¾in. long and curved, carmine above, pinkish below; upper sepal erect, ¼in. wide at the base, narrowed to a tail 1½in. long; lower sepals 1½in. long, joined for about one-third of their length, the pair measuring 1in. across, the free portion narrowed to tails; colour bright rosy carmine. This plant blossoms freely in spring, well-flowered plants making pretty and attractive-coloured specimens. It requires the treatment recommended for M. Harryana. It is a native of Peru, and was introduced into English gardens in 1874.

Illustration Horticole, ser. iii., t. 196 (var. *lineata*).

M. Backhousiana.—A large-flowered, handsome species, flowers 16in. across having been produced on cultivated plants. The leaves and other characters are the same as those of M. Chimæra, the difference between the two being in the size and colour of the flowers, those of M. Backhousiana being brighter and less thickly spotted with purple-brown. The lip, too, is narrower than in M. Chimæra. There are many who incline to the opinion that the last-mentioned species is a very variable one, and that, in a botanical sense, many plants which are known in gardens as distinct species are merely varieties of it. M. Backhousiana was introduced from New Grenada in 1879. It blossoms in autumn and winter, the flowers lasting about a fortnight. It should be treated as recommended for M. Chimæra.

Sander's Reichenbachia, t. 19.

M. senilis is a pale-coloured variety; the hairs on the surface of the flowers also are shaggier.

M. bella.—One of the most remarkable of the species known as the Chimæra section of Masdevallia. The flowers are large, and strangely formed, suggesting enormous spiders. The leaves are channelled, about 8in. long, broadest at the apex, narrowing downwards to a stalk-like base. The flower-scape is pendent or horizontal, 6in. long, thin and wiry, and bears a solitary flower, in which the three sepals are large, partly united by their edges, forming a kind of triangle, 2in. across; the tails are 4in. long, rather stiff, the upper one bent backwards, the two lower ones forwards and crossing each other; the lip is ¾in. across, kidney-shaped, stalked; and the two small petals form a pair of ear-like appendages to the column. The colour of the sepals and tails is pale yellow, thickly spotted with brown-purple; that of the lip and petals is white. Nothing can be more interesting than a well-flowered example of this species. It requires the treatment recommended for M. Chimæra; flowering in autumn and winter. Introduced from New Grenada in 1878.

Gardeners' Chronicle, June, 1880, p. 757.

M. Carderi.—This pretty little species is related to M. erythrochæte, but has exceptionally-formed flowers. The leaves are rather thin, 5in. long, ¾in. broad, scarcely narrowed at the base. The flowers are borne singly on decumbent scapes, 3in. long. The sepals are united, and form a bell-like limb, ¾in. across and ½in. deep, white, with a purplish zone and a yellow base; the tails are 1in. long, spreading, yellow; the inside of the bell is covered with short ferrugineous hairs. The petals and lip are small and white. The flowers are nodding and graceful; they are developed in June, and last about a fortnight. The plant requires the same treatment as M. Chimæra. From the exceptional colour and form of its flowers, this little species deserves to be included in all good collections. It was introduced from Colombia in 1883.

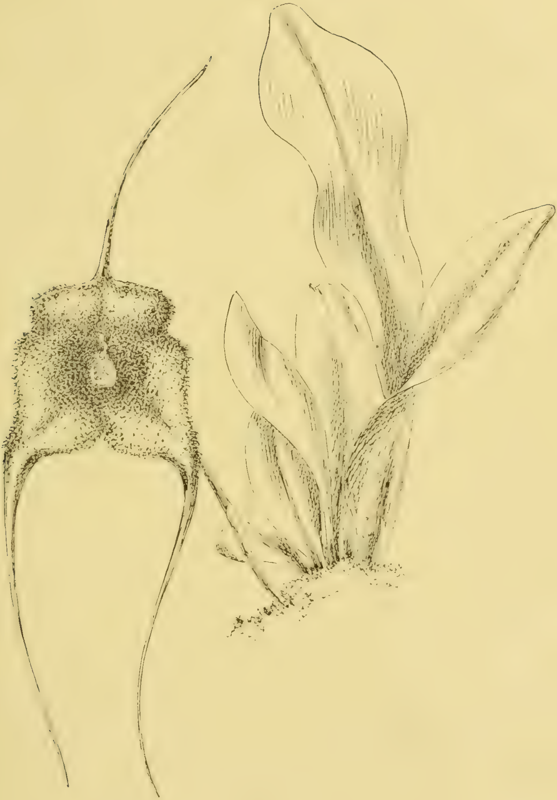
Gardeners' Chronicle, Aug., 1883, p. 181.

M. chelsoni ×.—A hybrid raised by Messrs. Veitch and Sons, from M. Veitchii and M. amabilis. It has the habit of the latter, but larger flowers and taller scapes. The sepals are spreading, the two lower ones united half-way down, so as to form a two-lobed limb 1in. across; the tails are very thin, and 1½in. long; colour orange-yellow and deep crimson. This is a graceful plant, and when grown into a good tuft, it produces a great number of flowers, which remain fresh a month or more. It requires the same treatment as M. Harryana.

M. Chestertoni.—One of the most distinct kinds of the Chimæra group, differing very widely in the form and size of its flowers from M. Chimæra. The leaves are tufted, 5in. long, 1in. wide, broadest above the middle, pointed, channelled, scarcely stalked, pale dull green. The scapes are pendulous, 4in. long, with numerous sheaths, one-flowered. Flower 2½in. across; sepals spreading, ovate, 1in. long, yellowish green, with spots and streaks of purple, each having a tail-like appendage, 1in. long, curved at the point; petals very small, and club-shaped, yellow, with black tips; lip kidney-shaped, concave, ¾in. across, with red veins on a pale red ground. This species blossoms in September, and requires the same treatment as advised for M. Chimæra. Introduced from New Grenada in 1883.

Botanical Magazine, t. 6977.

M. Chimæra.—One of the most wonderful of all Orchids. Some would call its flowers ugly: none would deny the extraordinary character of their shapes and colours. "No name more applicable could be found for it than that of the offspring of Typhon and Echidna, which had the body of a goat, the head of a lion, and the tail of a dragon, and which vomited forth flames of fire" (Reichenbach). There are several other species very similar to it, and one or two of them are sometimes known as M. Chimæra. The true plant has leaves 1ft. long, 1½in. broad, slightly channelled, dull green, the stalks springing from sheaths 1in. long. The flower-scape is curved, 6in. to 9in. long, sheathed at the nodes, one-flowered. Each flower is com-



MASDEVALLIA CHIMÆRA VAR. WALLISII

(½ nat. size).

posed of three united, triangular sepals, spreading, slightly curved, each 1in. broad at the base, and forming a shallow cup, whence they gradually narrow to thin, straight tails, the whole sepal measuring about 6in. in length; the inner surface is covered with soft hairs, and is coloured creamy yellow, with large spots and blotches of purple-brown. The petals are small, and the lip is a pouch with slightly-toothed edges, creamy white. The flowers remain fresh several weeks. Sometimes a second, and even a third, flower is developed from the same scape if it is left on the plant. Introduced from New Grenada in 1872.

Gardeners' Chronicle, July, 1881, p. 113.

M. Wallisii is similar to this, but has shorter tails.

Plate.

M. Nycterina was for a long time known as the true M. Chimæra.

The species known as the Chimæra group require special treatment. They are best cultivated in teak boats or baskets, with the bottom open, so that the flower-scapes can push through unimpeded. Thus treated, the plants, when in blossom, have a still more striking appearance than when they are cultivated in pans and the flowers are made to grow erect or horizontal. The plants require little soil for their roots, 2in. in depth being quite sufficient. Line the basket or boat with living sphagnum, and then add rough fibrous peat, with a few nodules of charcoal and a sprinkling of sand. These plants must be kept moist at the root all the year round; in summer they should be watered almost daily. Suspend them near the roof in a cool house, such as suits Odontoglossum crispum, taking care that sunlight does not reach them direct, as the leaves scorch easily. In winter—that is, from the beginning of November till the middle of March—they should be placed in a moist house, where the temperature will not be allowed to fall lower than 50deg. on the coldest nights. They should be re-potted every spring.

M. coccinea.—A bright-coloured species, the flowers being as red as a soldier's coat. It is said to be like M. ignea, but with larger flowers and stouter leaves. These latter are 5in. long, strap-shaped, rounded at the apex, stalk-like at the base, thick, fleshy, dark green. The flower-scapes are 1ft. high, one-flowered; the tube is short, and curved; the upper sepal narrow, curved, horizontal, rose-tinted; the two lower sepals broad, joined at the base, somewhat falcate, narrowed to a long point, glowing scarlet. This plant blossoms in winter, and remains fresh for several weeks. It requires the same treatment as M. Harryana. Introduced from New Grenada in 1868, but now very rare. In many collections a variety of M. ignea is grown for M. coccinea.

Gartenflora, t. 870.

M. Davisii.—A large-flowered, distinct species, with pretty canary-yellow flowers. The leaves are tufted, 8in. long, ¾in. wide, thick and leathery, blunt-pointed, with a distinct petiole, 2in. long, and sheathed at the base. Scapes erect, 1ft. long, one-flowered; sepals united at the base, and forming a narrow tube ¾in. long, then spreading, the upper one suddenly narrowed to a tail 1in. long, the lower pair 2½in. long, united about half-way down, forming a flat expansion 1½in. across, with tails ¼in. long; petals and lip almost hidden in the tube. This species usually blossoms in autumn, and remains in beauty for several weeks. If grown under the conditions recommended for M. Harryana, it forms a large tuft, and flowers freely. Its colour is exceptional in the genus. It is a native of Peru, whence it was introduced in 1875.

Botanical Magazine, t. 6190.

M. ephippium.—A large-flowered species, in form quite distinct from all other cultivated kinds. The leaves are erect, fleshy, shining green, from 6in. to 9in. long, 1½in. wide, narrowed to a stalk 2in. long, blunt and recurved at the apex. The scape is erect, stout, angled, one-flowered; flowers 9in. long, including the tails; upper sepal small, concave, round, yellow and brown, terminated by a long, reflexed, slender, yellow tail; lower sepals united, and forming a concave, bowl-shaped, ribbed body of irregular shape, 1in. across, deep rufous brown, the tails joined at the base, and then curving away to a length of from 3in. to 5in. The plant blossoms in spring, and requires the treatment recommended for M. Chimæra, except that it thrives better in pots than in baskets. It is a very

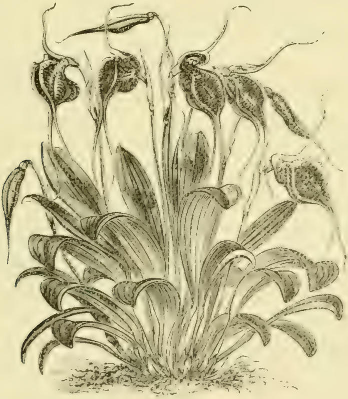


Fig. 69. Masdevallia ephippium
(much reduced).

remarkable Orchid, almost equalling M. Chimæra in its fantastic shape. Introduced in 1875 from New Grenada. Syn. *M. Trochilus*.

Fig. 69 (for which we are indebted to the Editor of the "Garden"); Botanical Magazine, t. 6208.

M. erythrochæte.—A pretty and free-flowering plant of the Chimæra group. The leaves are erect, channelled, 1ft. long, ¾in. wide, narrowed to a stalk-like base. The flower-scapes are usually horizontal, 4in. long, one-flowered, with numerous sheaths. The flowers are 1in. across, with triangular, papillose sepals, almost flat, white, with yellowish spots, the apices lengthened into thin, dull red tails 2in. long; the petals are small, and the lip is narrow, saccate, and whitish. An easily-grown plant, which should be treated as recommended for M. Chimæra. It blossoms in autumn, and remains in beauty a month or more. It was introduced from Central America in 1882. Except a slight dissimilarity in size and in the colour of the spots on the sepals, there is no difference between this and *M. Houtteana*, which has paler flowers, with drooping, dark red tails, 2in. long. *M. Benedictii* is also closely allied; it has leaves 8in. long, ½in. wide, and hairy flowers, yellowish, with brown spots, the tails being 1in. long and reddish brown; the lip, too, is broader.

M. Estradæ.—A small species, with grotesquely-formed and richly-coloured flowers. The leaves are in dense tufts, and are 3in. long, spoon-shaped, the blade fleshy, flat, ¾in. across, keeled, bifid at the apex. The scapes are 4in. long, erect, one-flowered; flowers with a short, bent tube, from which the three equal sepals diverge, one upwards, the other two downwards; they are oval in shape, ½in. long, violet-purple in the lower half, and white in the upper; the tails are 1½in. long, and yellow; the upper sepal is concave, and is blotched with yellow at the base. This free-flowering little plant requires similar treatment to M. Shuttleworthii. It blossoms in spring, about April. Introduced in 1874, from New Grenada, where its discoverer found it in cultivation in the gardens of Donna Estrada.

Botanical Magazine, t. 6171.

M. Harryana.—One of the best, and certainly the most popular, of all Masdevallias. It is easily imported, easy to cultivate, and never fails to flower. Magnificent specimens of it have been grown, fifty or more flowers expanded on a plant at one time being a frequent occurrence. The leaves are erect, 10in. long, 1in. broad, the lower half narrow and stalk-like, sheathed, the blade thick, fleshy, and shining green. The scapes are 1¼ft. to 1½ft. long, one-flowered; flower 3in. long, with a short, pale yellow tube; the upper sepal narrow and tail-like, except at the base, erect; the lateral sepals broad-ovate, 2in. long, falcate, narrowed to an acute point, joined by their inner edges at the base; colour varying from lilac to blood-red, with a purplish hue, yellowish in the throat. A native of New Grenada, whence it was introduced in 1869. It blossoms at various seasons of the year.

Botanical Magazine, t. 5990 (as *M. Lindeni*).

There are many named varieties of this species, their distinguishing characteristics being as a rule pointed out by their names, as, for instance, *atrosanguinea*, *Bull's-blood*, *cœrulescens*, *grandiflora*, *lateritia*, *lilacina*, *miniata*, and *versicolor*. Some of these are great improvements on the type, but they are a good deal mixed up by dealers.

Var. *decora* has flowers with the lower sepals 3in. long and 2½in. wide.

Var. *Denisoni* has purplish-crimson flowers nearly 3in. across.

M. Harryana represents the robust-growing, free-flowering kinds which thrive in as low a temperature as is advisable for any cool Orchid. It has been successfully grown in an unheated frame, being protected from frost by mats; but it is, of course, safer when grown in a house the temperature of which in summer is as cool as possible, and the atmosphere moist. The leaves are easily scorched by bright sunlight. The plants should be grown in well-drained pots, using a compost of two parts rough peat and one part sphagnum, with a sprinkling of silver sand. The soil should be kept moist all the year round, and almost saturated in summer. The most favourable time to re-pot is February, when the soil should be shaken away from the roots if at all sour, and the dead roots cut away. It is not unusual for a large proportion of the roots to die during winter.

M. ignea.—A pretty, bright-flowered species, and one of the most popular. The leaves are semi-erect, 6in. to 9in. long, with a long, attenuated, stalk-like base, rounded at the apex, 1¼in. across, fleshy, dark green. The scapes are 9in. to 12in. long, erect, one-flowered. Each flower has a short, curved tube, so that the sepals face horizontally; the upper one is narrow, tailed, decumbent, 1½in. long; the two lower ones are joined half-way down, broad-ovate, sharp-pointed, 1½in. long, flat, 1½in. across the pair; colour orange or flame-red, with six broad, crimson lines. They are fleshy in substance, and remain fresh on the plant for about six weeks. This species should be grown as advised for M. Harryana. It blossoms in winter and spring. Specimens with over forty flowers open are sometimes shown. Introduced from New Grenada in 1871.

Fig. 70; Botanical Magazine, t. 5962.

There are numerous named varieties of this, the best of them being: *aurantiaca*, flowers orange-yellow; *Boddaërtiana*, flowers rose-tinted, yellow on the under side; *Eckhartii*, flowers rich crimson; *Marshalliana*, flowers large, yellowish; *Massangeana*, flowers orange-scarlet, with crimson stripes, 2½in. across; and *Stobartiana*, flowers mauve-tinted.

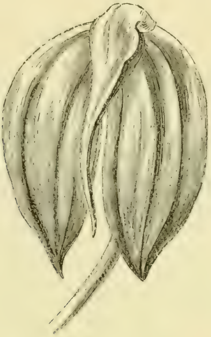


Fig. 70. Flower of Masdevallia ignea
(nat. size).

M. Lindeni.—A beautiful plant, of the richest colour, similar in leaf and flower to M. Harryana, but dwarfer, and differing in colour. It has leaves 6in. long, the lower half narrow and stalk-like, the upper thick, fleshy, shining green, 1in. across, channelled, the apex two-lobed. The scapes are erect, 8in. to 12in. long, coloured like the flowers, which are 4in. long, including the tails; the sepals are like those of M. Harryana in form, their colour being a brilliant magenta, the tube white. The plant blossoms irregularly; indeed, where several specimens are grown, it may be had in flower half the year, June being the most prolific time. It requires the same treatment as M. Harryana. Introduced from New Grenada in 1872.

Fig. 71; Floral Magazine, 1872, t. 28.

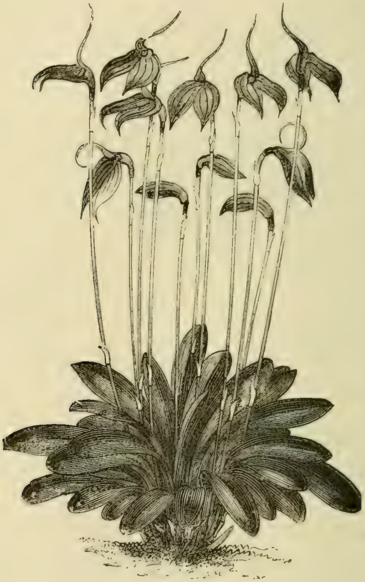


Fig. 71. Masdevallia Lindeni
(much reduced).

M. macrura.—A robust, large-flowered plant, of exceptional form. The leaves are thick, fleshy, shining green, 9in. to 12in. long, 2in. wide, with a petiole 2in. long, widest near the apex. The scapes are erect, as long as the leaves, one-flowered; the flowers are 9in. to 12in. in length, the sepals united at the base, and forming a broad, horizontal cup ½in. deep, then spreading vertically, the upper one 5in. long, gradually narrowed from a broad base, the lower ones free, narrow, tail-like, sometimes curved towards the tips, and from 4in. to 6in. long; petals and lip small; colour tawny yellow, with numerous small, purple spots, the cup shaded with purple outside, paler inside. This free-growing plant should be grown in a pot under the conditions recommended for M. Chimæra. It blossoms in December, remaining fresh about two months. Introduced from New Grenada in 1870.

Lindenia, t. 113.

M. Mooreana.—A large-flowered, stout-leaved species, related to M. macrura, and sometimes met with under the name of *M. melanoxantha.* The leaves are 6in. to 8in. long, 1½in. wide, rounded at apex, stalked at base, with a distinct node and long, brownish sheaths, fleshy, thick, dark green, spotted purple on the lower half. The scapes are erect, purplish, 4in. long, with a basal and middle sheath, one-flowered; flowers horizontal, cup-shaped, with a depression or chin, the cup nearly 1in. in depth and width; upper sepal narrowed to a twisted tail 2in. long; lower sepals joined for one-third of their length, then free and tail-like; colour dull white, with purple speckles on the tube, and a large blotch of crimson-purple on the lower sepals; tails paler; petals white; lip oblong, hairy, dark purple. This species blossoms in March, and requires the same treatment as M. Chimæra, but should be planted in pots. Introduced from Venezuela in 1884.

Botanical Magazine, t. 7015.

M. Nycterina.—A very interesting species, which for some time was cultivated as the true M. Chimæra, a much larger and showier plant. M. Nycterina has leaves about

6in. long, channelled, broad almost to the base, which is sheathed. The scape is pendent, or rests on the ground, 3in. long, one-flowered; the flowers are triangular in outline, the sepals being equal in size, joined by their lower edges, each narrowed to a point, from which springs a thin tail 3in. long; the body of the flower measures 2in. by 1½in.; the inner surface is covered with soft hair; colour tawny yellow, shaded with brown and thickly spotted with purple; the petals are small and pouched, with jagged edges, whitish. This plant should be grown along with M. Chimæra. Although smaller-flowered, it possesses all the curiosity of form and colour which characterises that species. Introduced from New Grenada in 1873.

Floral Magazine, ser. ii., t. 150.

M. polysticta.—A densely-tufted, free-flowering plant. Leaves 6in. long, 1in. broad, strap-shaped, stalked at the base, sheathed. Scape 9in. long, erect, many-flowered; sepals pale lilac, spotted with purple, united at the base, the upper one largest, ½in. across, concave, keeled, with yellow tails ¾in. long; lower sepals free almost to the base, the margins recurved, ½in. long, fringed with soft hairs; tails yellow, ¾in. long; petals and lip very small. Although the individual flowers are rather small, they are bright in colour, and, being numerous on the scapes as well as freely produced, they make a bright and attractive little picture every spring. The plant blossoms in January, and lasts in beauty over two months. Its culture is the same as advised for M. Shuttleworthii, but it should be planted in a pot or pan. Introduced from Peru in 1874.

Botanical Magazine, t. 6368.

M. racemosa.—A marvellous plant as seen by collectors and shown by dried specimens, but under cultivation it has not yet realised the expectations formed of it. The stems are creeping, longer than in any other kind. The leaves are 4in. long, spoon-shaped, with thin petioles, the blade ¾in. across, fleshy, dark green. The flowers are borne on long, branching racemes, as many as twenty on a raceme being shown by a dried specimen: so far, however, six flowers on a raceme are the most yet produced by cultivated plants. They are erect, 1in. across; the tube narrow, ¾in. long; the odd sepal ½in. long, pointed; the pair of sepals united almost to the base, the free portions curving outwards so as to form a wide, two-lobed blade; colour brilliant orange, with dark red lines. This species requires cool treatment all the year round, and should be otherwise treated as recommended for M. Shuttleworthii. Introduced from Peru in 1883. Many attempts were made to introduce this plant after Dr. Lindley described it in 1845, but none were successful until 1883. Syn. *M. Crossii.*

Gardeners' Chronicle, June, 1884, p. 737.

M. Roëzlii.—This large-flowered, dusky-coloured plant is related to M. Chimæra, and is at least as remarkable as that species. The leaves are erect, 6in. long, 1in. wide, channelled, narrowed from about the middle to a short stalk, which is inclosed in a brown sheath. The scape is stout, curved at the base, then rising to a height of 7in., one-flowered; sepals purplish brown, equal, ovate, ¾in. across, 1in. long, not twisted as in M. Chimæra, the tails 2½in. long, in some varieties nearly black, with numerous spots, paler towards the base; petals small; lip purse-shaped, not toothed at the edges, light mauve-coloured. The plant blossoms in spring, and if the scapes are allowed to remain they will develop several flowers in succession. It requires the same treatment as M. Chimæra. Introduced from New Grenada in 1880.

Williams' Orchid Album, t. 243.

M. rosea.—One of the prettiest of all Masdevallias, and when properly managed a most profuse flowerer. It has semi-erect, spoon-shaped, dark green leaves, the blade being ovate, 2in. long, the stalk about the same length. The flowers are borne singly on thin scapes a little longer than the leaves, and have a narrow tube 1in. long; the narrow upper sepal almost rests on the lower sepals, which are joined near the base, and are ovate-acute, tapering to tail-like points, a good variety being 2in. long by 1in. across the lower sepals; lip and petals hidden in the tube; colour clear rose, with a tinge of purple. A plant in a 5in. pot, with no less than 120 expanded flowers upon it, was exhibited in 1886. This species requires the same treatment as M. tovarensis. It is a native of Peru, and was introduced in 1880, although known and described forty years before.

Belgique Horticole, 1882, t. 3.

M. Shuttleworthii.—The prettiest and largest-flowered of the dwarf kinds of Masdevallia. It has spoon-shaped leaves, seldom exceeding 4in. in length and 1in. in width, the lower half narrowed to a stalk. The scape is 5in. long, erect, one-flowered; the flowers are very large for the size of the plant (2in. across, not measuring the tails); sepals united at the base, and forming a shallow cup, then spreading, the upper one the largest, concave, ovate, 1in. long, yellowish red, with numerous deep red dots and parallel, red nerves; lower sepals spreading and decurved, ovate, 1in. long, deep rose-coloured, with numerous red dots; tails 2in. to 3in. long, curved, the upper half yellow, the lower half green; lip and petals very small. This species is one of the most popular of all Masdevallias. It blossoms freely in spring, and remains in beauty several weeks. There are several forms of it, and the colours

sometimes vary from those here given. Introduced from New Grenada in 1878. The plant which first flowered was

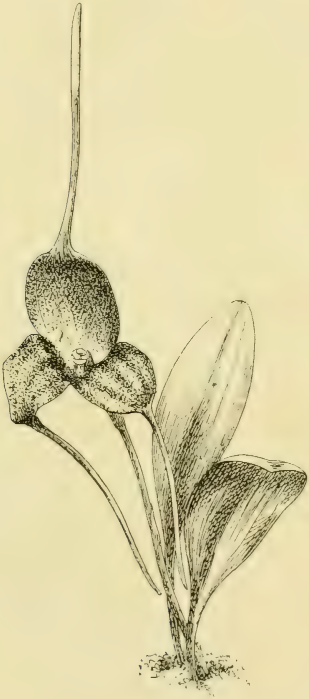


Fig. 72. Masdevallia Shuttleworthii
($\frac{2}{3}$ nat. size).

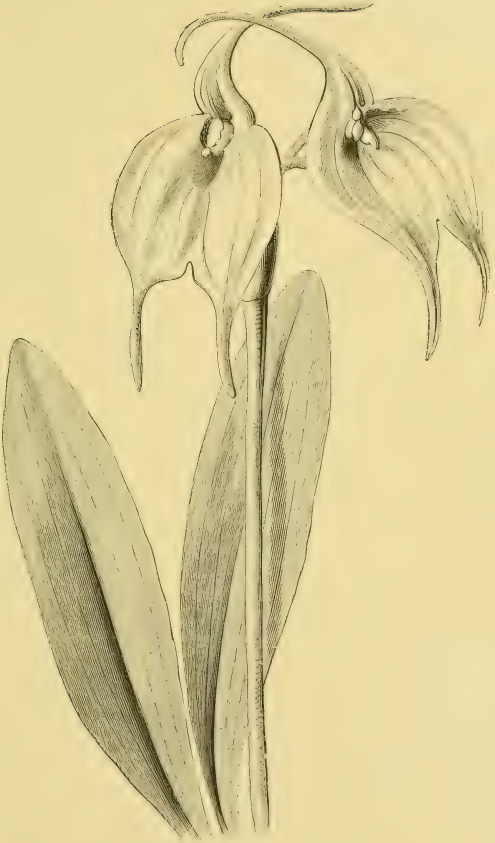
imported by accident on a large clump of Cattleya, and was for some years unique in gardens. It is plentiful now.

Coloured Plate; Fig. 72; Botanical Magazine, t. 6372.

Var. *xanthocorys* has smaller flowers, paler in colour, with the tails pure yellow.

We have selected M. Shuttleworthii as the representative of all the smaller kinds which require the following treatment: The plants should be grown in small teak baskets or pans, using a mixture of fibrous peat and sphagnum, with charcoal and crocks for drainage. They should be planted firmly, and be kept supplied with moisture at the root all the year round; in hot weather they will require a good watering daily. The best position for them is near the roof-glass in a shaded part of the cool Odontoglossum-house, where they will get plenty of fresh air. In winter they require a temperature of 50deg. at night, and 5deg. warmer during the day. The best time to renew the soil is about February. None of the kinds require a large amount of root-room.

M. tovarensis.—The only white-flowered species, and one of the most popular in gardens. The leaves are erect, 5in. long, ¾in. across, thick, fleshy, shining green, very brittle, the base narrowed to a stalk 2in. long, and inclosed in green sheaths. The scape is erect, two-edged, 5in. long, with a pair of vase-shaped bracts at the top, from which spring the flowers, strong scapes bearing four each; tube short and curved; upper sepal narrow, tail-like, reflexed, 1½in. long; lower sepals united and forming a flat blade 1½in. long and 1in. across, with a pair of tails ¾in. long. The whole flower is pure snow-white, and is sweet-scented. The plant blossoms in winter, and continues in flower for two months or more. It is easily cultivated if planted in pots or pans, but requires more warmth in winter than the majority of Masdevallias. We find it healthiest when wintered with the Cattleyas. This species was the first introduced of the large, attractive-



FLOWERS AND LEAVES OF MASDEVALLIA TOVARENSIS

(nat. size).

flowered kinds. In 1865, when it first flowered, there were scarcely half-a-dozen species in cultivation, and these were the most insignificant of those now known. It is a native of Tovar, in New Grenada. Syn. *M. candida.*

Plate; Botanical Magazine, t. 5505.

M. triangularis.—Perhaps the most free-flowering of all Masdevallias. The leaves are tufted, 4in. long, ovate in the blade, stalked, dull green. The flower-scapes are erect, 6in. long, one-flowered; the sepals triangular, slightly concave, spreading, the broad part ¾in. long, the tail 1in. long; colour light ochre, with numerous brown spots, clear at the base, the tails dull red; petals and lip very small. Although dull in colour, this is an elegant little plant and well worth growing. It blooms in the winter, remaining in flower nearly two months. It may be grown as advised for M. Shuttleworthii. Introduced in 1843, from Colombia.

M. triaristella.—A lovely little gem, one of the tiniest of Orchids, but of far greater beauty and interest than many large and popular kinds. The leaves are erect, about 2in. long, very narrow, almost terete, with a short stalk, and crowded in a dense tuft. The scapes are erect, very thin, and hair-like, 3in. long, one-flowered; the two lower sepals are deep brown-crimson, united so as to form a little boat ½in. long, with a pair of short, horn-like, yellow tails near the tip; the upper sepal is short, erect, with a yellow tail ½in. long; the tails are thickest at the apex. A large tuft of this plant is in the Kew collection, where every summer it bears a great number of the most charming little jewels of flowers. Introduced in 1876, from New Grenada.

Fig. 73 (for which we are indebted to the Editor of the "Gardeners' Chronicle").

M. trichæte, M. tridactylites, M. triglochin, and several other species, are similar to the above in the smallness and beauty of their flowers, and the diminutive size of the whole plant. They are, of course, distinct species. All require the same treatment as M. Shuttleworthii.

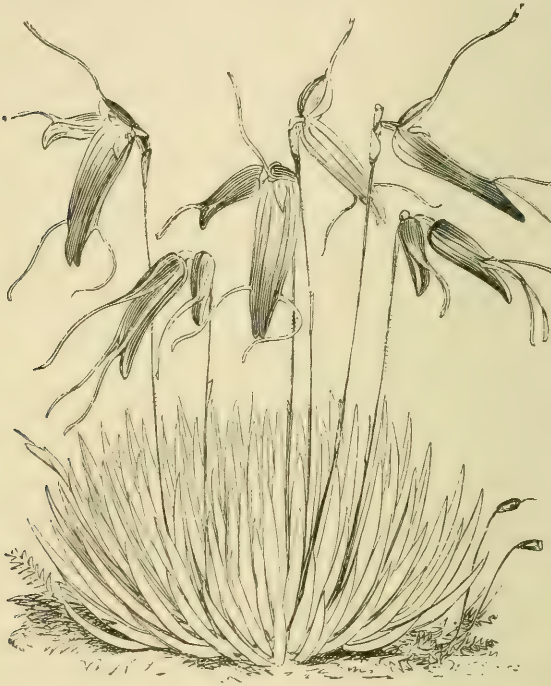


Fig. 73. Masdevallia triaristella
(nat. size).

M. Veitchii.—The most brilliant in colour, and one of the largest-flowered, of all Masdevallias. It is not only one of the most beautiful, but the most singular of Orchids, for the vivid hue of the flowers is due to the whole inner surface of the sepals being covered with minute papillæ (raised dots) of the most brilliant colours. These are largest and most crowded where the colour is deepest. Leaves 6in. to 8in. long, 1in. wide, erect, broadest near the top, which is acute-pointed, the lower part narrowing to a partially-sheathed base. The scape is erect, 1ft. long, one-flowered; the ovary curved; the sepals form a shallow cup, the upper one 2in. long, ovate, narrowed to a tail-like point, the lower pair united and forming a slightly concave blade 1½in. across, then separated and narrowed to short tails; the petals and lip are very small. Colour bright cinnabar-red, with a broad patch of purplish violet on the inner surface of the lower sepals. The plant blossoms in autumn, sometimes also in spring, the flowers lasting a long time. It requires the same treatment as M. Harryana, but a degree or two more warmth in winter. Introduced from Peru in 1868.

Botanical Magazine, t. 5739.

Var. *grandiflora* has flowers nearly twice as large as those of the type.

M. Wageneriana.—A small but pretty-flowered species, scarcely 3in. in height. Leaves in tufts, spoon-shaped, rather leathery. Flowers produced singly on decumbent, wiry scapes, bearing a few small sheaths; sepals united at the base, forming a short, cup-like tube, the upper one concave, with a slender tail 1in. long, the lower ones spreading, their tails recurved, colour yellow, with a few red dots in the throat; petals minute, hatchet-shaped; lip small, toothed, with a claw-like apex. Like all the small plants of this genus, M. Wageneriana must be magnified to be seen to advantage. It thrives when treated the same as M. Shuttleworthii. Native of Central America; introduced in 1855.

Botanical Magazine, t. 4921.

CHAPTER XXXIX.

MAXILLARIA.

About 120 species are included in this genus. They fall into three distinct groups: (1) With ovate pseudo-bulbs, large, strap-shaped leaves, and erect, one-flowered racemes; example, M. grandiflora. (2) With ovate, ribbed pseudo-bulbs, large, plaited leaves, the lower half of which is narrow and stalk-like, and the flowers in dense racemes. (3) With climbing rhizomes, small pseudo-bulbs, grassy foliage, and numerous small flowers. The best of the second group are M. hyacinthina, M. elongata, and M. pallidiflora. Of the third group the best are M. variabilis, M. tenuifolia, and M. purpurata. None of these, however, are worth specially recommending here, those selected for description being the handsomest of the first group. The species of this genus are abundantly distributed from Mexico to Peru, and less numerously in the West Indies and Brazil. The flowers are somewhat fleshy, and they last many weeks before fading.

The genus takes its name from a certain resemblance traced by its authors between the column and lip of the blossoms and the maxillæ or jaws of insects. Many of the species of Lycaste were originally described as Maxillarias. One species (M. bicolor), which is not included in the present enumeration, is of some slight economic value to the Peruvians, who chew the insipid, succulent pseudobulbs as a preventive against thirst. This circumstance is scarcely worthy of notice in a work like this, except in connection with an order which contains hardly any useful members.

Culture.—From a cultural point of view it may be said that few Orchids are easier to grow than the Maxillarias. All the species described here thrive best when treated as pot plants, using for them a compost consisting of good fibrous peat and chopped sphagnum moss, in about equal parts. During the growing season they require a liberal supply of water; in the winter, however, less water should be given. They may be grown in the same house as Odontoglossum crispum, but in winter the temperature should not be allowed to fall below 50deg. If kept in a warm house, the leaves soon become badly spotted—a sure indication that the temperature is too high. The air about them should be fresh, and the light good, although they do not like bright sunshine.

The species described here are sufficiently ornamental to find a place in every collection, however limited the space at command. The majority of the kinds blossom profusely, large quantities of flowers being produced on even moderate-sized plants.

M. grandiflora. — A handsome-flowered, large-leaved plant, deliciously fragrant. It has ovate, compressed pseudobulbs, which are two-leaved. Leaves from 9in. to 12in. long, broadly strap-shaped, dark green, recurved. The scape is erect, 8in. long, one-flowered. The flowers are 4in. across; sepals ovate, acute-pointed, spreading; petals shorter; lip three-lobed, pouched, similar to that of M. venusta, but without the purple on the front lobe, which is yellow and powdered. The plant blossoms in autumn and winter, and lasts a long time in flower. Introduced from Peru about 1850.

Floral Magazine, ser. ii., t. 322.

M. luteo-alba.—A very robust and free-flowering species, easily cultivated. Pseudo-bulbs 2½in. long, ovate, compressed, one-leaved. Leaves broad, blunt-pointed, dark green, 1ft. long, the base narrowed and stalk-like. The scapes spring from the base of the pseudo-bulbs, and are 6in. long, clothed with sheathing bracts, one-flowered; each flower is 6in. across; the sepals are 3in. long, brown at the back, nearly ½in. wide, tawny yellow except at the base, which is creamy white, the upper one erect, the lower ones drooping and suggestive of the lop-ears of a rabbit; the petals are erect, pointed forward, half as long as the sepals, white at the base, then brown, yellow above; the lip is three-lobed, the side lobes erect, yellow, with purple stripes, the middle lobe recurved, hairy, yellow, with white margins. This plant is worth a place where large specimens are wanted, as it soon fills a large pan, and is ornamental even when not in flower, whilst when in blossom it has a singular and attractive appearance. It was introduced from New Granada in 1846. Syn. *M. luteo-grandiflora.*

Williams' Orchid Album, t. 106.

M. nigrescens.—This is a useful, free-flowering species, deserving to be grown on account of the colour of its flowers, which is a deep vinous red throughout, shaded with dull purple; the blossoms are about 2in. across, and they are borne on erect scapes, 4in. long. The pseudo-bulbs are oval, compressed, blackish. The leaves are strap-shaped, acute at the tips, 1ft. long, 1½in. broad. The plant thrives under quite cool treatment. It is a native of New Granada, and was introduced in 1849.

M. picta.—An old, easily-grown species, which blossoms so profusely that we have seen many scores of flowers on quite a small plant. The pseudo-bulbs are ovate, compressed, one- or two-leaved. The leaves are strap-shaped, acute-pointed, 8in. to 12in. long. The flowers are 2in. across, of a soft creamy yellow externally, and of a rich deep orange within, streaked and dotted with dull purple and chocolate; they are produced singly, upon numerous basal scapes, from 3in. to 6in. high. The petals, as may be seen on reference to the Illustration (Fig. 74), are curiously incurved. The lip is white, spotted with purple, and the column is wholly purple. The plant is a native of the Organ Mountains of Brazil, whence it was introduced in 1832; its blossoms are produced during the winter months.

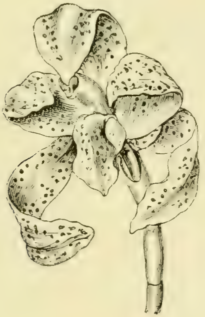


Fig. 74. Flower of Maxillaria picta
(nat. size).

Fig. 74; Botanical Magazine, t. 3154.

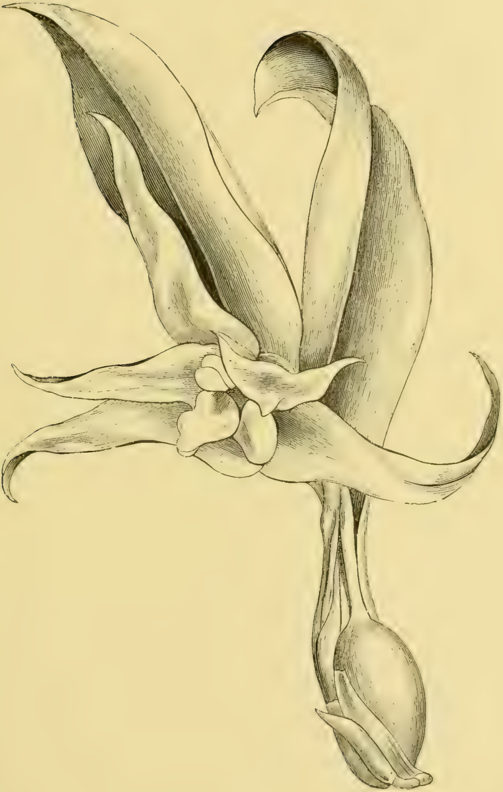
Var. *brunnea* has the outside of the sepals coloured reddish brown.

M. acutipetala has smaller flowers, similar to those of M. picta in form and colour.

M. Sanderiana.—The most beautiful of all Maxillarias, bearing some resemblance to a fine variety of Lycaste Skinneri. It has ovate, compressed pseudo-bulbs; oblong, acute-pointed, bright green leaves, 9in. long. The scape is decumbent, one-flowered, each flower measuring 5in. across; sepals 2in. broad, ovate, spreading, the upper one concave; petals shorter, semi-erect; lip three-lobed, the middle lobe concave, forming a cup with the column and side lobes, the edges wavy. The flowers are pure white, the lip and base of the segments deep crimson, with a few large spots of the same colour scattered over the petals. This species was seen in flower for the first time at the Orchid Conference, held at South Kensington in 1885, and it was certainly one of the grandest of the new Orchids exhibited there. It was introduced from Peru by Mr. Sander, of St. Albans, in 1884. It should be treated as advised for the other species.

Garden, 1887, t. 606.

M. venusta.—A large-flowered, charming plant, not unlike M. grandiflora, but more robust. The pseudo-bulbs are ovate, compressed; each bears two leaves, which are broad-oblong, recurved, acute-pointed, 1ft. in length, light shining green. The scapes are 6in. long, curved upwards, clothed with reddish bracts, one-flowered; the flower is nodding, 6in. across; the sepals broad at the base, gradually narrowed to a point, the upper one concave, the two lateral ones undulated and somewhat curved, 3in. long; petals shorter than, but similar in shape to, the lateral sepal; lip three-lobed, the middle lobe recurved, triangular,



MAXILLARIA VENUSTA

(½ nat. size).

yellow, with a fleshy disk and a pair of crimson spots; side lobes reddish on the margins; the rest of the flower is pure glistening white. The plant blossoms in winter or spring, the flowers lasting about a month. Native of Ocaña at 6000ft. elevation, whence it was introduced in 1862.

Plate; Botanical Magazine, t. 5296.

CHAPTER XL.

MICROSTYLIS.

Of the forty known species of Microstylis, about half-a-dozen are cultivated for the sake of their richly-coloured foliage. They are terrestrial in habit, and are closely related to Malaxis paludosa of our native flora. The pseudo-bulbs are fleshy, and they perish a year after maturity, as in Calanthe vestita. The leaves are plaited, thin, and succulent in texture, and their folding bases completely inclose the pseudo-bulbs. The flowers are small, purple or yellow, and are produced on erect spikes; they are not ornamental. The genus is represented in Europe, Asia, and America.

Culture.—The species here described are from tropical countries; they can, therefore, only be grown in hot, moist houses. They all prefer a very moist, shaded position, a close frame or bell glass affording them the sort of atmosphere they like. In the winter all the leaves usually fall off, and the pseudo-bulbs remain dormant for several weeks. During this period, they should be kept fairly dry, and be taken out of the soil. About the beginning of March they should be started into growth again. This is best done by filling small pans or pots with drainage, and an inch or so of peat-fibre and chopped sphagnum, upon which the pseudo-bulbs should be pegged on their sides. Growth will then commence at every node, and a tuft of pretty foliage ought to be obtained by July. Except when at rest, these plants require an abundant supply of water at the root. The flowers, though small, are singularly interesting in structure, especially when seen under the microscope.

M. calophylla.—This is a prettily-variegated plant. The leaves are 3in. long, ovate, narrowed to a point at the apex, pale yellow-green, with a central patch of a shade of brown that is very near burnt sienna; there are also numerous transverse lines of this colour amongst the marginal yellow. The flowers are yellow. Introduced from Java in 1877.

M. chlorophrys.—In this species the leaves are 4in. long, 2in. broad, narrowed to a point, wavy at the margins, the stems and lower part of the leaves purplish; the leaf-blade shining sepia-brown, with a marginal band of grey-green ½in. wide. Flowers purple. A well-grown plant of this, when bearing its erect spikes of glistening flowers, is a pretty little picture. It is usually in good condition at Kew. Introduced from Borneo in 1881.

Fig. 75.

M. discolor.—A beautiful little plant, which Sir W. Hooker called one of the most lovely of terrestrial Orchids. The stems are clustered, 2in. long, green, inclosed in the sheathing bases of the leaves. The leaves are 4in. long, ovate, plaited, deep shining crimson-purple, the margins pale green and very wavy. The flowers are yellow. Grown along with Anœctochili this plant thrives well, and is a pretty object. It is a native of Ceylon, and was introduced in 1862.

Botanical Magazine, t. 5403.

M. Lowii.—This species has the habit and form of M. chlorophrys, but the leaves differ in colour; they are 3in. long, 1in. wide, narrowed from the base to the point, the margins wavy; colour brownish-red, with a broad band of pale green along the midrib of the leaf. Stem rosy purple. Flowers very small, purple. Introduced from Borneo in 1881.

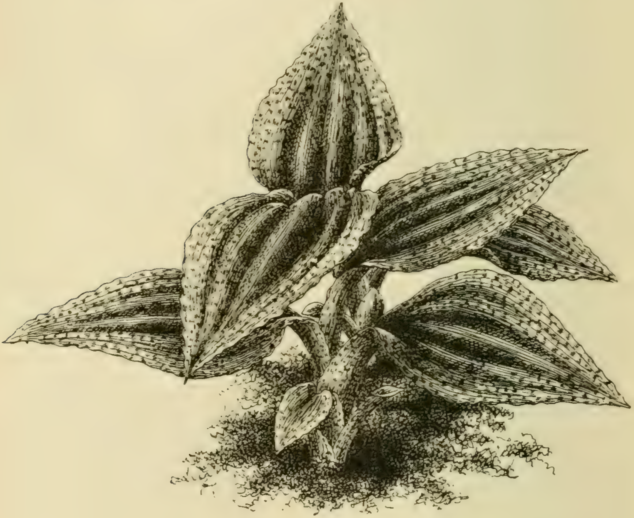


Fig. 75. Microstylis chlorophrys
($\frac{3}{4}$ nat. size).

M. metallica.—A charming little plant, easily kept in health, and almost always attractive. It is, as the late Professor Reichenbach called it, quite a gem. A cylindrical bulb bears leaves of an oblong, acute shape, 2in. long, 1in. wide, six in number. They are rosy crimson beneath, and blackish purple above, with quite an exquisite metallic lustre. The flowers are small, purplish in colour. Introduced from Borneo in 1879.

Botanical Magazine, t. 6668.

CHAPTER XLI.

MILTONIA.

THIS genus embraces not more than a dozen well-marked species, all of them showing considerable variation in the size and colouring of the flowers. Most of them are in cultivation, as they are easy to grow, and, with scarcely an exception, bear large and handsome flowers. All are natives of Brazil, except M. Warscewiczii, which is Peruvian. Several were amongst the first-formed collections of Orchids that were cultivated in English gardens about fifty years ago. The genus was named in compliment to Lord Fitzwilliam (Viscount Milton), who, fifty years ago, had one of the best collections of Orchids then known.

The Miltonias are related to the Odontoglossums; indeed, four of the species were till recently known in gardens as Odontoglossums. They have either long, stout, creeping rhizomes, upon which the pseudo-bulbs occur about 1in. apart, or the pseudo-bulbs are clustered. The leaves vary in number from four to eight, all except two springing from the bottom of the pseudo-bulb, their sheathing bases inclosing it when young. There are generally two leaves on the apex of the pseudo-bulb, and these are strap-shaped or linear, smooth, shining green, the keel on the under side being prominent. As a rule, the leaves, when they are two years old, fall away from the pseudo-bulbs.

The flowers are borne on scapes which spring from the base of the last-matured pseudo-bulbs, and each scape bears one or more flowers; the petals and sepals are usually similar in form and size, spreading; the lip is large, generally flat and broad, suddenly narrowed at the base to a short, thick neck; the disk on the front of the labellum is formed of several prominent ridges; the column is short, and usually winged.

Culture.—All the species are epiphytes; they therefore require an open fibrous peat, broken into small lumps, with most of the fine particles beaten out. Some thrive when planted in well-drained pots or pans: others are healthiest when grown on rafts or in shallow teak baskets. All require liberal supplies of water at the roots in summer, and sufficient in winter to keep the soil just moist. As the details of culture for most of the species differ somewhat, it will be best to give particulars along with each kind. None of them bear tobacco fumigation well, and, although they are liable to become much disfigured in a very short time through thrips, it is safer to wash the leaves now and then with an insecticide than to fumigate them. We have seen fine plants of M. vexillaria ruined in a few hours by tobacco-smoke. Miltonias are easily propagated by division, as the rhizomes branch freely, and develop plenty of roots from the under side. The most favourable time for re-potting and dividing them is after the flowers have faded.

The leaves and pseudo-bulbs of some of the kinds of Miltonia are normally pale yellowish-green in colour, old parts of the plants being almost wholly yellow. Some beginners imagine that ill-health is the cause of this, but it is the natural colour, and cannot be altered, except at the expense of flowers. Miltonias like plenty of light, though not direct sunlight, and they flower only when well ripened.

M. anceps.—A small-growing plant, having long, creeping rhizomes, and flattened, yellowish pseudo-bulbs, 2in. long, with sheathing basal leaves, and a pair of short, strap-shaped, apical leaves rarely more than 4in. long. Scape erect, sheathed, one-flowered. Flowers of medium size; the sepals and petals dull olive-colour, tinged with purple at the base; the lip spreading, 1½in. long, 1in. wide, white, spotted and barred with red near the crest. The sepals and petals seem to vary considerably in colour. Probably this is one of the many forms of M. spectabilis. It requires the same treatment as the last-named species. Introduced from Brazil in 1851. Syns. *M. Pinellii*, *Odontoglossum anceps*, *Oncidium anceps*.

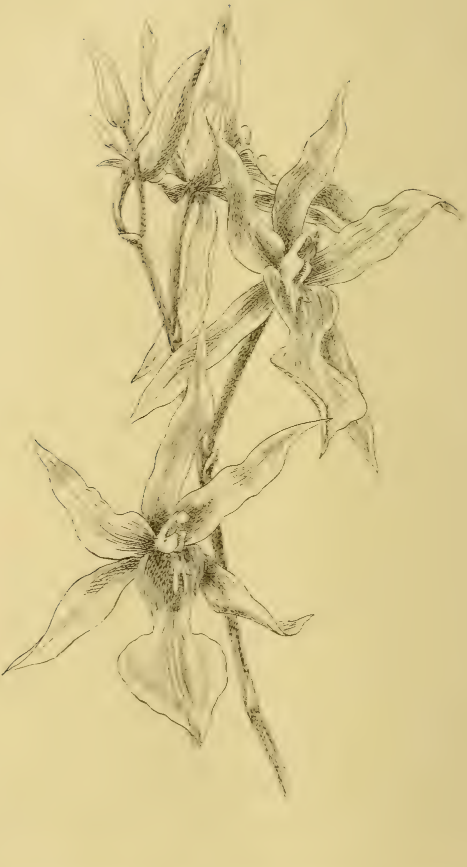
Plate; Botanical Magazine, t. 5572.

M. candida.—A strong, large-leaved species, very free-flowering under ordinary treatment. The pseudo-bulbs are clustered, ovate, only slightly compressed, narrowed towards the top, 3in. or more long, with a pair of apical leaves 1ft. in length and 1½in. wide; the basal leaves shorter, with broad sheaths. Scape erect, 1ft. or more long, bearing six to eight flowers, each 2½in. across; petals and sepals spreading, red-brown, with a few yellow bars and spots; lip scoop-shaped, wavy at the margin, pure white, afterwards turning to cream-yellow. The plant blossoms in autumn, the flowers remaining fresh for a month or more. A native of Brazil; introduced in 1830.

Botanical Magazine, t. 3793 (var. *flavescens*).

The named varieties are: *flavescens* (lip yellowish), *grandiflora* (flowers larger and brighter in colour), and *Jenischiana* (flowers dark-coloured).

M. candida should be planted in a pot or pan, using a compost of two parts peat-fibre to one part sphagnum, and two-thirds filling the pot with crocks. Press the soil



INFLORESCENCE OF MILTONIA CLOWESII

($\frac{3}{4}$ nat. size).

firmly about the roots, and keep it moist always: when growth is vigorous, a daily watering should be given. The best position is such as suits Cattleya Mossiæ or Cœlogyne cristata. It does not like bright summer sunshine.

M. Clowesii.—A strong-growing species, with the habit of M. candida, and similar in the form of its flowers; in pseudo-bulbs and foliage the two species are almost identical. Scape erect, many-flowered, each flower nearly 3in. across; the sepals and petals chestnut-brown, with a few yellowish blotches; the lip heart-shaped, slightly constricted in the middle, pointed at the apex, with a conspicuous crest; the colour vinous purple in the lower part, the rest being pure white. This species blossoms in September or October, or even as late as December, the flowers lasting a month or more. It requires similar culture to M. candida. Introduced from Brazil in 1843. Syn. *Odontoglossum Clowesii.*

Plate; Botanical Magazine, t. 4109.

M. cuneata.—A robust, free-flowering plant, larger in all its parts than most of the Miltonias, and exceptional also in having dark green foliage. The pseudo-bulbs are clustered, ovate, 4in. long, slightly compressed, smooth, sheathed in leaves at the base, and each bearing on the apex a pair of stout, strap-shaped leaves 1ft. long and 1½in. broad. The scape is erect, about 1ft. long, and bears from four to eight flowers; these are from 3in. to 4in. across; sepals and petals undulated, narrowed from the middle to an acute, reflexed point, and coloured chocolate-brown, with a few bars of yellowish green, the tips being wholly of the latter colour; lip 1½in. long, 1in. wide, wavy, creamy white, the crest composed of two parallel ridges, which are spotted with rose-purple; column large, winged, creamy white. The blossoms expand in

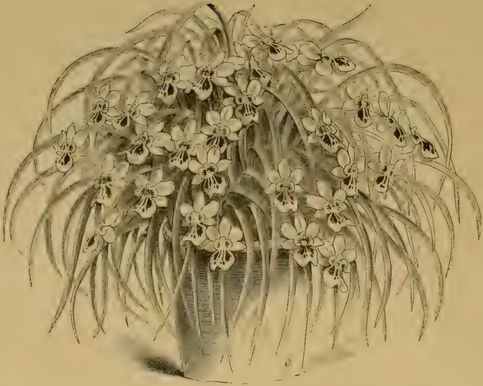
February, and remain fresh more than a month. This species thrives best when planted in a pot or pan, in a compost of peat-fibre and sphagnum, and placed in the Cattleya-house, or even where Vandas are grown. It likes plenty of light and moisture. Introduced from Brazil in 1843. Syn. *M. speciosa.*

Botanical Register, 1845, t. 8.

M. Moreliana.—Although usually called a variety of M. spectabilis, this fine Orchid is sufficiently distinct in colour alone to deserve to rank as a species. It has ovate, much-flattened pseudo-bulbs from 2in. to 3in. long, shining, apple-green in colour, becoming bright yellow when old, and bearing two short, strap-shaped leaves, rarely more than 6in. long, with several shorter basal leaves. The rhizome is stout, and creeps along the surface of the soil; the pseudo-bulbs are developed about 1½in. apart. The scape is erect, 6in. long, clothed with sheathing bracts 1½in. long, and bears a single flower, from 2in. to 4½in. across; sepals and petals 1in. to 2in. long, deep vinous purple; lip 1in. to 2in. long, nearly as broad, spreading, purple, lighter in colour than the other parts of the flower, and veined with deep purple. The flowers expand in October or November, and remain fresh at least six weeks. This is one of the most beautiful of all Orchids. The flowers vary in size and colour; the largest measurements here given are from a very fine variety at Kew. It requires the same treatment as M. spectabilis. Introduced from Brazil in 1847. Syn. *M. purpureo-violacea.*

Botanical Magazine, t. 4425.

M. Phalænopsis.—This is a delightful little Orchid when well grown. The pseudo-bulbs are clustered, ovate, only slightly compressed, about 1in. long, when young sheathed in the bases of the lower leaves, with a pair of leaves



MILTONIA PHALÆNOPSIS
(much reduced).

on the apex. The leaves are narrow and grass-like, from 8in. to 12in. long, pale green. The scapes are erect, nearly as long as the leaves, each bearing from two to four flowers; these are flat; sepals 1in. long, oblong, pointed, petals broader and rounded—both pure white; lip large, flat, 1in. across at the base, nearly as broad again at the apex, where it is divided into two spreading lobes, white, blotched and streaked with crimson towards the middle. This plant blossoms in spring or summer, and remains in bloom about a month. It requires the treatment recommended for M. Roëzlii. Specimens 1ft. across, bearing a score or more large flowers, and the graceful grass-like foliage mingled with them, are most beautiful objects. It was introduced in 1850 from New Granada, where it is said to carpet rocks at an elevation of 16,000ft. Syn. *Odontoglossum Phalænopsis.*

Plate; Warner's Select Orchids, t. 30.

M. Regnelli.—In habit and foliage, this species resembles M. candida. It has narrow, flattened pseudo-bulbs. Leaves 1in. broad, bright green. Scapes erect, each bearing several flowers, over 2in. across; sepals and petals spreading, recurved at the apex, white; lip almost as wide as long, with a three-ridged, yellow crest, the rest being rosy purple, with deeper-coloured veins. The blossoms appear in September, and remain fresh for a month or more. The plant should be treated as recommended for M. cuneata. Introduced from Brazil in 1864.

Botanical Magazine, t. 5436.

Var. *purpurea* has the sepals and petals tinted with rose, the margins white, whilst the lip is crimson, with a white crest.

M. Roëzlii.—This beautiful species is closely related to M. vexillaria, differing chiefly in colour. The pseudo-bulbs are clustered, somewhat compressed, ovate, 1in. to 2in. long, inclosed in the sheathing bases of the lower leaves, and bearing at the apex only one leaf. The leaves are 1ft. long, ¾in. wide, acute-pointed, thin in texture, and pale green. The scapes are erect, and bear from two to four flowers, each of which is 3in. wide, flat and pansy-like; sepals and petals 1in. in length, oblong, pointed, pure white, with a large, purple blotch at the base of each petal; lip two-lobed, broadest at the apex, where it is 2in. wide, pure white, with a tinge of yellow and purple near the crest. This species blossoms generally twice a year—in spring and in winter—the flowers remaining fresh for about five weeks. Its cultivation is not easy. It thrives best when grown in a moist, tropical house, where it is suspended near the roof-glass, and shaded from bright sunshine. Fine specimens have been grown in a house devoted to Phalænopsis. It should be potted in peat-fibre and sphagnum, using pans or small pots. Plenty of water must be given at all times. Thrips and red spider are its greatest enemies, destroying the leaves in a very short time if once they get established upon the plants. Dipping the plants about every fortnight in a weak mixture of water, soft soap, and tobacco-juice, will keep the insects under. Introduced from New Granada in 1873. Syn. *Odontoglossum Roëzlii.*

Botanical Magazine, t. 6085.

Var. *album* has no purple in the flowers.

Var. *rubrum* has more purple on the lip than the type.

M. spectabilis.—This was the first-introduced Miltonia, and it is still one of the best, some of the varieties being exceptionally beautiful Orchids. The rhizomes are stout; the pseudo-bulbs 1in. apart, oblong, very flat, 1in. to 3in. long, yellowish, inclosed in the sheathing basal leaves when young, and bearing at the apex a pair of pale apple-green, oblong leaves, varying in length from 4in. to 12in. Scapes erect, covered with sheaths, 6in. to 8in. long, one-flowered; flowers 4in. across; sepals and petals 2in. long, $\frac{3}{4}$in. broad, pure white, becoming cream-coloured before fading; lip 2in. long, and nearly as broad, spreading, rose-

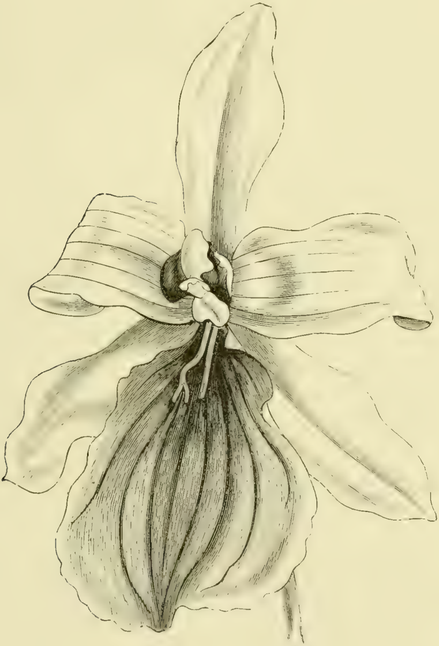


Fig. 76. Flower of Miltonia spectabilis (nat. size).

purple, almost crimson, the veins darker in colour, the crest of three short, projecting ridges. This plant blossoms in autumn, and remains in perfection for a month or more. Specimens with from twenty to fifty flowers open together are not unusually seen in cultivation. There is considerable variation in the size and colour of the flowers, some being much superior to others, although the poorest plant is a good Orchid. Introduced from Brazil in 1837. Syn. *M. bicolor.*

Fig. 76; Botanical Magazine, t. 4204.

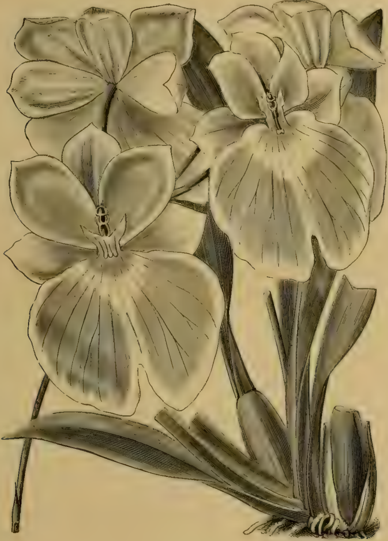
Var. *radians* has the habit and flowers of the type, but the lip is white, with lines of purple radiating from the crest.

Var. *rosea* has narrower, longer pseudo-bulbs, and rose-tinted sepals and petals; the lip is banded with rose.

Var. *virginalis* is distinguished by its tall scapes, its large flowers, and the deep crimson of its lip.

M. spectabilis may be taken as representative of all the Miltonias with creeping rhizomes. It should be grown on a raft or in a shallow teak basket, and requires only about 1in. thickness of soil about its roots. The soil should be peat-fibre and sphagnum, and the plant must be fastened firmly in position by means of thin copper wire. A position near the glass in an intermediate house, or where Cattleyas are grown, is the most suitable, but it must be shaded from bright sunshine. Water must be freely given in summer—almost every day, in fact—and in winter sufficient to keep the soil moist. Whilst in flower, the plants may be removed to a cool house.

M. vexillaria.—One of the most popular of all Orchids, although somewhat difficult to manage. The pseudo-bulbs are narrowly oblong, and about 2in. long, bearing narrow-lanceolate, pale green leaves from 9in. to 12in. long. The



MILTONIA VEXILLARIA

(nat. size).

scapes are longer than the foliage, and bear from three to seven very large flowers, measuring 4in. in diameter; the sepals and petals are small, bright rose-coloured; the labellum is large and flat, deeply bilobed in front, rich rose, whitish at the base, streaked with yellow and red; the colour and shape of the flowers vary considerably in different plants. The blossoms are produced during spring and early summer. Syn. *Odontoglossum vexillarium.*

Plate; Botanical Magazine, t. 6037.

Var. *Hilliana* is distinguished by its purple-spotted and rosy-margined lip.

Var. *leucoglossa* is remarkable for its white lip.

Var. *rubella* (*Klabochorum*) has flowers smaller than those of the type, bright rose-coloured, produced in autumn. The pseudo-bulbs and leaves also are smaller.

Var. *superba* is a dark-coloured form; the lip being almost crimson, with three broad rays of white.

There are numerous other named varieties of this species, but we need not include them here.

M. vexillaria thrives best when grown in the same house as Cattleyas in winter, but during hot weather the Odontoglossum-house will suit it. The plants should be potted in good peat-fibre and sphagnum, well drained; they should be elevated well above the pot, and be watered freely when growing. Thrips are their greatest enemy, and to keep these under, the plants should be carefully examined every week or so, and cleaned if necessary. Although now well established in gardens here, the introduction of this splendid species was attended with much difficulty. It was originally discovered by the late Mr. Bowman, on the western slope of the Andes of New Granada, and was subsequently found by Wallis and Roëzl. Some of the plants were sent to M. Linden, who, however, failed to keep them alive. Living specimens were soon afterwards brought to England by Mr. Chesterton, and established in Messrs. Veitch's collection. Mr. Bull also was successful in the early days of its introduction. The original description by Professor Reichenbach, in the "Gardeners' Chronicle" for 1867, amusingly records the secrecy in which this plant was enveloped on its first introduction to Europe. He says that the flower from which the description was drawn up was borrowed for him by a friend, "after having given his promise (1) not to show it to anybody else, (2) not to speak much about it, (3) not to take a drawing,

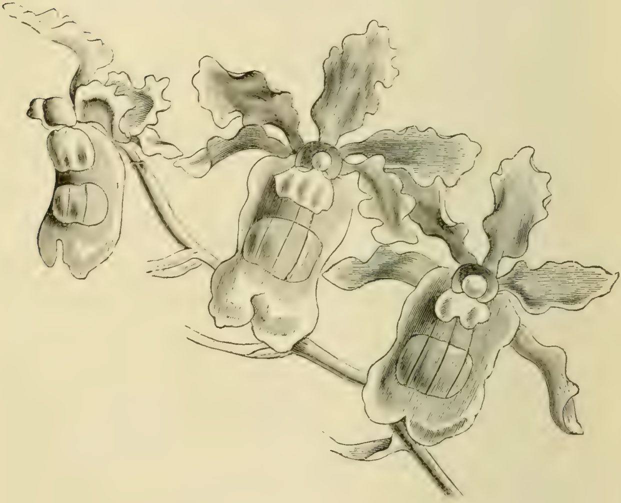


Fig. 77. Flowers of Miltonia Warscewiczii
(nat. size).

(4) not to have a photograph made, (5) not to look oftener than three times at it!"

M. Warscewiczii.—This extraordinary plant is generally known as *Oncidium Weltoni.* It differs from most Miltonias in its many-flowered, branching scapes, and in the fantastic colours of its flowers. The pseudo-bulbs are clustered, erect, 5in. long, 1in. broad, much flattened, green, usually with only one apical leaf, and several others springing from the base. Leaves strap-shaped, 6in. to 9in. long, 1½in. broad, bright green. Scape wiry, arching, varying in length according to the strength of the plant, strong pseudo-bulbs producing tall, loose-branching panicles of thirty or more flowers, each flower 2in. across; sepals and petals recurved at the margins towards the base, wavy, reddish brown, with yellow tips; lip almost circular, two-lobed, the margins curved back, so as to give the front a rounded appearance; colour rose-purple, with a central blotch of yellowish brown, and a broad, marginal band of white. It blossoms freely in summer or autumn, the flowers remaining fresh for several weeks. It should be grown along with, and be treated as advised for, M. candida. A native of Peru, whence it was introduced in 1869. Syn. *O. fuscatum.*

Fig. 77; Botanical Magazine, t. 5843.

CHAPTER XLII.

MORMODES.

THIS is a genus of remarkable and interesting plants, some of which also possess great beauty. It is nearly related to Catasetum, and differs chiefly in not having horns attached to the column. The plants are deciduous, losing their leaves in the late autumn. The pseudo-bulbs are stem-like, and taper towards the top, the older ones being clothed with the basal portions of the fallen leaves. The leaves are lance-shaped, plaited, about five or six in number, and are strengthened by several longitudinal ribs. The flowers are produced on thick, fleshy scapes originating in the nodes on various parts of the pseudo-bulbs; they are chiefly remarkable for the curiously-twisted column and lip, the latter being much incurved, and contracting at the base into a claw. The species are all epiphytal, and are natives of Central America and Mexico.

Culture.—Mormodes may be grown in pots of peat-fibre and sphagnum, and during the summer months should occupy the lightest position in the warm house. If, as is necessary, the pots are half-filled with drainage, the roots should receive copious supplies of water when growth has well commenced. Care must be observed, however, at the earliest stages. At that time, the back pseudo-bulbs furnish an adequate supply of nourishment to the young growths, and a superabundance of moisture is apt to cause decay. At no period must water be allowed to lodge in the centres of the growths. As growth ceases, a cooler and drier treatment is necessary to ripen the bulbs; the plants may then be placed on a shelf in the Cattleya-house, only sufficient water being given to prevent shrivelling.

M. Colossus.—An extraordinary species, of very striking appearance. It has tapering pseudo-bulbs 1ft. high, dark green where not covered by the sheathing bases of the old leaves. The plaited, bright green leaves are broadly lance-shaped, and 10in. to 15in. long. The flowers are 4in. to 6in. in diameter, and are borne on the upper part of strong spikes 2ft. long; the sepals and petals are spreading, narrow, and pointed, the lower portion being pink, changing to yellow towards the tips; the pointed, cordate lip is of a bright yellow, thickly marked with pink dots at the base, the edges curling outwards and meeting at the back; the column is about 1in. long, green, and arching, and is twisted in the usual manner. Although this is not a beautiful species, its remarkable structure renders it deserving of a place in any collection. It is a native of the mountains of Central America, and was introduced in 1870.

Botanical Magazine, t. 5840.

M. luxatum.—This species and its varieties are the handsomest representatives of the genus as yet known in cultivation. The pseudo-bulbs are 4in. to 6in. high, thick and rounded at the base, tapering towards the top; they bear four or five lance-shaped, plaited leaves, 1ft. to 2ft. long, of glaucous-green colour. The racemes of fragrant flowers are produced from the current season's growth about July. Each flower is 3in. in diameter, with the fleshy sepals and petals lemon-coloured, and the lip yellow, with a streak of dark brown down the centre. The flowers are remarkably distorted, and show more plainly, perhaps, than those of any other species the peculiar character of the genus. The lip is twisted obliquely, and, being uppermost, projects above the column. Introduced from Mexico in 1842.

Botanical Register, 1843, t. 33.

Var. *eburneum* is a much superior plant, with similarly-shaped flowers. These are 3in. to 4in. in diameter, very fragrant, and of a uniform creamy white. Few Orchids are more effective than a well-flowered specimen of this variety. Syn. *M. Williamsii.*

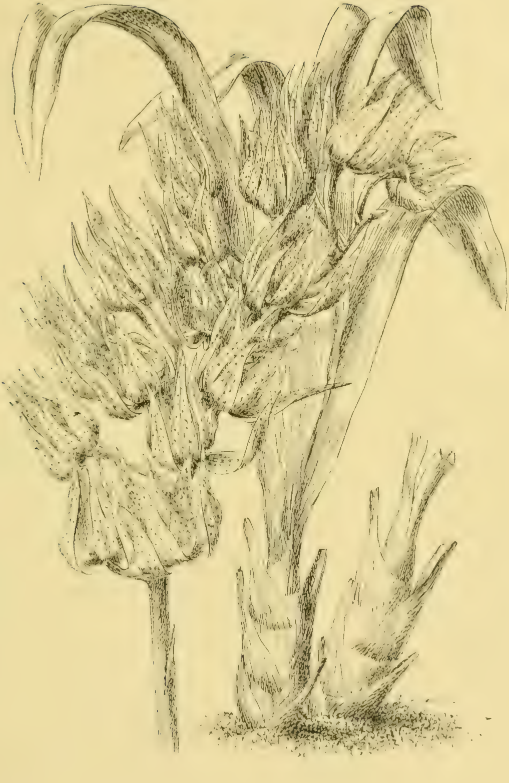
Var. *punctatum* has white flowers, the sepals and petals of which are profusely spotted with red on the inner side.

M. pardinum.—A very handsome species, with stem-like pseudo-bulbs 4in. to 7in. in height, and dark green, lanceolate, striated leaves. The scapes are over 1ft. long, with the numerous flowers crowded on the upper half. The sepals and petals are ovate and pointed, spreading at the base, but with the tips converging upwards. The lip is three-lobed, the side lobes being smaller and reflexed; like the other parts of the flower, it is of a bright yellow, marked with brownish-crimson spots. This curious and rare plant is a native of Mexico, and was introduced in 1837. It flowers during July and August.

Plate; Botanical Magazine, t. 3900.

Var. *unicolor* resembles the type in habit and form of flower, but the flowers are of a deep lemon-yellow and unspotted.

Botanical Magazine, t. 3879.



MORMODES PARDINUM

($\frac{1}{3}$ nat. size).

CHAPTER XLIII.

NANODES.

ACCORDING to the botanists' classification, this genus should be included in Epidendrum, but it is so well known under the above name, and withal so distinct, that we retain it. Two or three species have been introduced, but N. Medusæ is the only one worth cultivating.

Culture.—Being found at a considerable altitude, this species requires cool treatment, and may be grown in a light position near the roof-glass of the Odontoglossum-house. It succeeds best when planted in well-drained baskets of peat-fibre and sphagnum. It has no strictly-defined resting period, and before one growth is completed others start from the base. It should, therefore, have free supplies of water at all times, this point, and that of good drainage, being essential to its successful cultivation.

N. Medusæ. — Few Orchids present a more singular appearance than this. It is an epiphyte, with slender, pendent stems 1ft. in length, covered with the flattened, sheathing bases of the leaves. The oblong, fleshy leaves are arranged in two opposite rows, and measure 2in. to 4in. in length; they are notched at the tips, and are of a pale glaucous green. The flowers, of which one to three are produced in the axils of the terminal leaves, are 2in.

to 3in. in diameter, and of leathery texture. The sepals and petals are narrowly oblong, yellowish green, faintly tinged at the edges with purplish brown. The very remarkable lip is of a dark maroon-purple, orbicular, notched at the apex and two-lobed at the base; it is 2in. in diameter, is furnished with a conspicuous fringe formed by the entire margin being divided into numerous long and pointed segments. A native of Ecuador, and although long introduced, still a rare plant. Syn. *Epidendrum Medusæ.*

Plate; Botanical Magazine, t. 5723.

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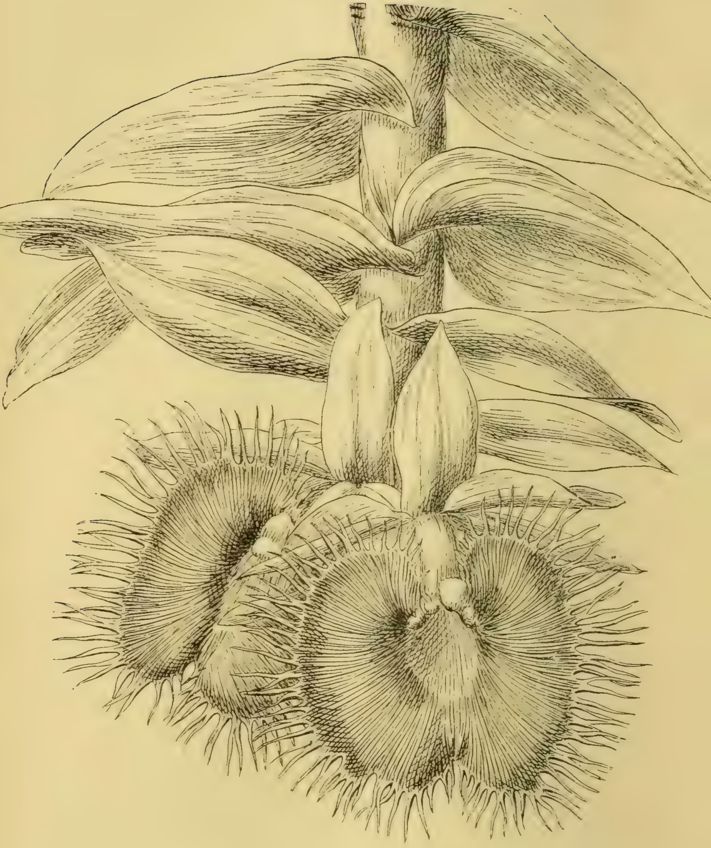


FLOWERS AND GROWTH OF NANODES MEDUSÆ

(nat. size).

CHAPTER XLIV.

ODONTOGLOSSUM.

THE popularity of this genus, one of the most beautiful of the Orchids, shows what rapid strides have been made in the cultivation and knowledge of the family during recent years. Odontoglossum was founded by Humboldt in 1815, and up to 1833 there were only five species known; whereas at the present time the number described is considerably beyond a hundred. It is distinguished botanically from Oncidium, to which it is closely allied, by the column being long and club-shaped—or, at any rate, usually narrowed at the base—and by the base of the lip being always parallel with the face of the column, and sometimes joined to it. Lindley adds that the lateral sepals are very rarely united. The Odontoglossums are either epiphytal or terrestrial, with pseudo-bulbs springing from a stout, creeping rhizome; the leaves are leathery or thin; the flowers are in few- or many-flowered racemes or panicles, proceeding from the rhizome, and are often very handsome. The species are natives of Mexico, Central America, Peru, and New Granada. The name is derived from two Greek words, *odous* and *glossa*, and signifies tooth-tongued—in allusion to the form of the labellum, and to its bearing tooth-like projections, called "calli," at the base.

Odontoglossums being in many respects among the most desirable of Orchids, we have included here the majority of the kinds known. Many of the species—such, for instance, as O. crispum—are exceedingly varied in floral characters, and whilst some of the best-marked forms are considered by certain authors to be distinct enough to rank as species, others class them as varieties only. In this matter it is proposed here to follow, as near as is convenient, the nomenclature of Professor Reichenbach.

Culture.—As in the early days of Orchid-culture in this country it was considered necessary to treat all exotic Orchids as stove plants, it is not surprising that Odontoglossums failed for some time to become established in our collections. All this, however, has been long since changed, and now all, or very nearly all, known Odontoglossums are placed along with "cool Orchids." Some of our leading Orchid-growers have put many of the species to the test of open-air culture, and the plants have withstood, uninjured, several degrees of frost. Although it is not intended to advocate the open-air culture of exotic Orchids, it is necessary that readers should distinctly understand that the genus Odontoglossum is purely alpine, no single species having hitherto been found low down the mountains, or in hot regions. The plants will not exist long in a healthy condition if kept in hot, close houses: this should be sufficient to recommend them to all amateur horticulturists. They enjoy a cool, moist atmosphere all the year round, and, unlike the majority of Orchids, do not, except in a few isolated instances, require a dry season; indeed, many of them grow freely during the winter months, and these must never be allowed to get dry. For their cultivation, we prefer a house running from north to south. In bright weather shading is essential, especially during the summer; but in winter, during very severe weather, no harm will be done to the plants if the thermometer falls as low as 45deg., whilst in hot summer weather the maximum temperature ought not to exceed 70deg. Above all things, a free current of air is indispensable to their well-being. Do not sprinkle them overhead much with the syringe, but in preference keep the air well charged with moisture by pouring water upon the stages and floors; and, as the temperature must be considerably lower at night than during the day, the condensation which this produces will be most beneficial to the plants. Although Odontoglossums grow naturally upon the trunks of trees, or in the vegetable *débris* which is lodged at the base of the branches, we have never seen them thrive for any length of time when grown upon blocks, probably because evaporation takes place too rapidly, and the roots get withered up. Some of the species send their roots through and about the various mosses which clothe the forest-trees in the humid mountain regions where they most abound, adhering so slightly to the branches that a well-known collector once told us that he found he could bring immense quantities of O. crispum down to the ground by merely throwing his lasso into the branches upon which the plants grew, and then pulling it towards him.

The pots, which should be only just large enough to hold the plants and allow a little margin of the compost around them, should be two-thirds filled with drainage. Add a little sharp silver sand or charcoal and chopped sphagnum to the fibrous peat. The little cone upon which the plants should be elevated may be surfaced with some living sphagnum; this, as it grows, will not only produce a neat and pleasing appearance, but will be found most congenial to the soft roots by keeping a nice, cool, moist atmosphere around them. Newly-imported plants, when starting into their first growth, should be treated to a little higher temperature than is here named for established plants, in order to promote a rapid growth, and assist them to form good pseudo-bulbs, on account of the severe check which they usually experience in transit; for in their weakened condition, artificial cool treatment sometimes gives them an additional check, from which they do not readily recover.

O. Andersonianum.—A beautiful plant, supposed to be a natural hybrid between O. crispum and O. gloriosum.

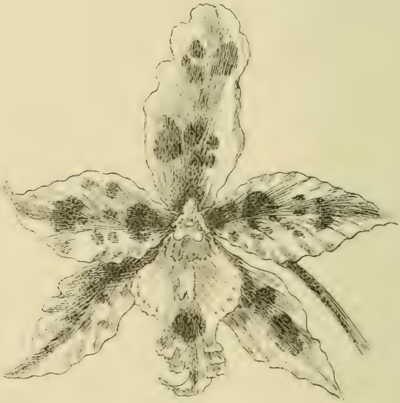


Fig. 78. Flower of Odontoglossum Andersonianum
(¾ nat. size).

In pseudo-bulbs and foliage it resembles the former, whilst the blossoms are more like those of O. odoratum. The flowers of the best forms are 2in. in diameter; the sepals and petals are narrower and more pointed, and the lip is narrower, than in O. crispum; the colour is cream-yellow, streaked and spotted with chestnut-brown, and there is usually a single large blotch on the lip. It requires the treatment recommended for Odontoglossums generally. A plant of it has produced a spike of fifty flowers. A native of New Granada.

Fig. 78; Williams' Orchid Album, i., t. 35.

Var. *angustatum*.—Petals and sepals narrower, and with larger blotches, than in the type.

Var. *lobatum*.—Flowers 2½in. across; lip narrow and lobed, spotted with cinnamon-red.

Var. *Pollett's*.—Sepals and petals tinged with rose; lip white, with a large, chocolate blotch.

O. baphicanthum.—A supposed hybrid from O. crispum and O. odoratum, to which it bears a close similarity in habit and foliage. The flowers are 2½in. across, sulphur-yellow, blotched with purple; the lip yellow, blotched with brown and red. There is not much difference between some of the forms of this and of O. Andersonianum except in the size of the blotches. It flowers in summer. Introduced from New Granada in 1876.

O. bictonense.—This was the first Odontoglot which reached England in a living state; but since the introduction of so many finer kinds it has gone somewhat out of favour, although it is remarkably free in its flowering and habit of growth. The pseudo-bulbs are ovoid. The leaves are 1ft. long, bright green, distinctly nerved. The scape is erect, and frequently attains a height of 2ft. or even more; the flowers are 1½in. across, and vary much in colour; they are yellowish, blotched with brownish purple; the lip is lilac, heart-shaped, with a wavy margin. It usually blossoms in autumn, and lasts a long time in perfection, provided the flowers are not allowed to get wet. A native of Guatemala, whence it was introduced in 1835.

Botanical Magazine, t. 3812 (where it is erroneously stated to be African), as *Zygopetalum africanum*.

O. blandum.—A rare species, and an exceedingly pretty one. Pseudo-bulbs as large as a walnut, compressed, two-leaved. Leaves narrow, about 9in. long. Spike a little longer than the leaves, bearing six to twelve flowers; sepals and petals equal in size, tapering to a point, white, copiously spotted with red-purple; lip 1in. long and about half as broad, wavy, the edges notched and toothed, and the apex pointed—colour the same as the petals; crest yellow, with two erect, narrow teeth. The flowers are produced at various times in the year: naturally, it is said to flower all the year round. It requires a moist atmosphere, plenty of water, and a temperature a few degrees warmer than the cool house. It first flowered in England at Chiswick in 1871. The rareness of this species in collections is due to the great difficulty experienced in importing it alive.

Bateman's Monograph of Odontoglossum, t. 28.

O. cariniferum.—A handsome species, with large, well-marked flowers, which are developed in profusion annually. Pseudo-bulbs oblong, compressed, 3in. to 4in. long, two-leaved. Leaves leathery, about 1ft. long. Flower-spikes stout, branched, the branches zigzag; flowers 2in. across; sepals and petals acute, with a distinct keel at the back, olive-brown, tipped and edged with yellow; lip narrow at the base, suddenly expanding into a kidney-shaped blade, white, becoming brown with age, the crest mauve-red, and the column white, with purple stains. This should be grown along with O. grande; it flowers in October and November. Introduced from Central America in 1848.

Bateman's Monograph, t. 10.

O. Cervantesii.—A dwarf-growing, lovely species, which grows and flowers freely under the most ordinary treatment. We have seen it thrive for several years in a

Wardian case. It should be planted in shallow pans, and suspended near the glass. The pseudo-bulbs are 1½in. long, compressed, with acute edges; each bears only one leaf, which is oblong, and 4in. to 6in. in length.

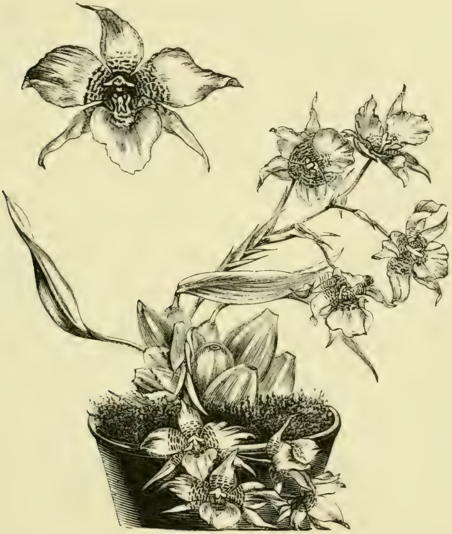


Fig. 79. Odontoglossum Cervantesii, showing Habit and detached Flower
(Habit, much reduced; Flower, ⅔ nat. size).

The flowers are 2in. in diameter, and are large for the size of the plant; they are produced during the winter months, lasting several weeks in full beauty, and are very fragrant. The sepals and petals are white, transversely streaked at the base with fine lines of reddish brown; the lip is marked in a similar manner, and is deeply three-lobed, the lower lobe being broad and heart-shaped. This species was introduced from Mexico in 1847. Syn. *O. membranaceum.*

Fig. 79; Botanical Magazine, t. 4923.

Var. *decorum.*—Flowers larger; segments broader, streaks broader and shorter, and coloured purple instead of red.

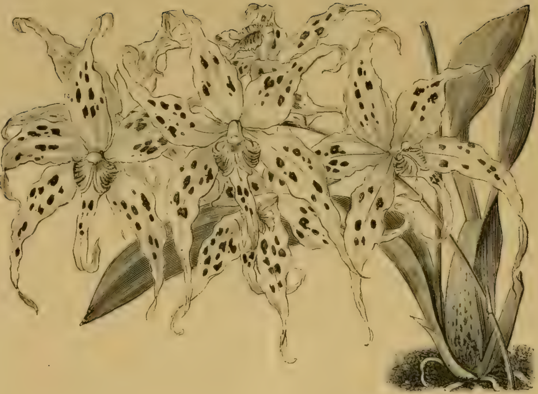
Williams' Orchid Album, vi., t. 251.

Var. *punctatissimum.*—Flowers spotted all over with rose.

O. cirrhosum (or *cirrosum*).—A graceful and pretty species, with elongated, compressed pseudo-bulbs, 2in. to 3in. in length, bearing two leaves about 1ft. long. Flowers 4in. across, produced in profusion on a long, arching, branched spike; sepals narrow, with long, flexuous, tail-like ends; petals a little broader at the base; lip three-lobed, the side lobes toothed, the middle one narrow, recurved, and tail-like; colour of all the parts milk-white, with spots of maroon scattered over them; crest yellow, with radiating red lines. The flowers appear in April and May. Introduced from Ecuador in 1875. This species thrives best when grown in the cool end of the Cattleya-house. It has the bad habit of sometimes developing vrey stout spikes, with only very few flowers upon them. When such spikes show themselves, it is best to cut them off, and save the vigour which would otherwise be wasted on an almost barren spike.

Plate (for which we are indebted to Messrs. Veitch and Sons); Botanical Magazine, t. 6317.

O. citrosmum.—One of the most attractive of cool Orchids, and easily kept in health if grown at the warmer end of the cool-house, or along with the Cattleyas. It requires little shading even in summer, and after its new pseudo-bulbs have ripened it should be kept quite dry till the new flower-scapes are visible in the apex of the new



ODONTOGLOSSUM CIRRHOSUM

(nat. size)

growth. The pseudo-bulbs are smooth, and shining light green. The leaves are thick, and darker in colour. The flowers, which are about 3in. across, and full in outline, are sometimes pure white, and sometimes (as in var. *roseum*) beautifully suffused with rose; they are borne on pendulous racemes, appearing about the months of May and June and remaining in full beauty for three or four weeks. From fifteen to thirty flowers, which are delicately lemon-scented, are produced in each raceme. The lip has a long claw, and is suddenly expanded into a broad, kidney-shaped blade. Unlike all other species, this pushes its flower-spike along with the new growth, the former usually appearing when the latter is about 2in. long. It is also exceptional in having pendulous racemes. It was introduced from Guatemala in 1840. Syn. *O. pendulum*.

Bateman's Monograph, t. 6.

Var. *album* has flowers wholly white, except the yellow crest on the base of the lip.

Var. *punctatum* has rosy flowers, dotted with purple.

O. Coradinei.—A supposed natural hybrid, with the habit of O. crispum, producing arching scapes, bearing about ten flowers. The flowers are 3in. across, star-like, primrose-yellow, with large blotches of chestnut; lip shorter than the petals, paler, and with usually only one large blotch of red-brown in the centre. Introduced from New Granada in 1872. It usually blooms in winter if grown along with the cool kinds.

Williams' Orchid Album, ii., t. 90.

O. cordatum.—This has ovoid, compressed, shining green bulbs, each bearing a leaf 6in. to 8in. long. Scape erect, simple or branched, bearing few or many handsome flowers. Sepals and petals yellow, blotched and barred with deep rich chocolate-brown; they are very much elongated and curiously wavy, and the sepals are keeled behind. The lip is large and heart-shaped (whence the specific name), with a long, pointed apex; its ground-colour is white, blotched with lilac and purplish red, or sometimes with pale yellow and crimson. This species blooms during late spring and early summer. It is a native of Guatemala and Mexico, whence it was introduced in 1837.

Botanical Magazine, t. 4878, as *O. maculatum* (the true maculatum is a different plant).

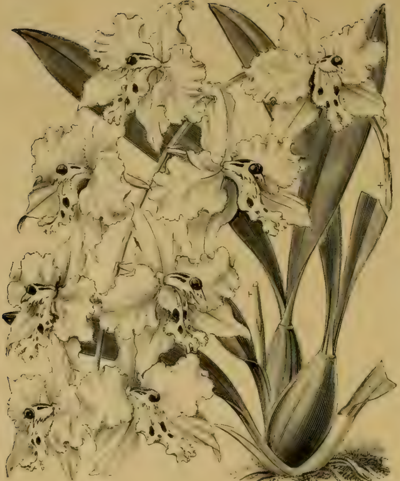
Var. *sulphureum.*—Sepals and petals sulphur-yellow; lip white, with sulphur blotches.

O. coronarium.—A remarkable plant, one of the most attractive when in bloom, but unfortunately rather difficult to manage successfully. It has a long, creeping rhizome, bearing ovoid, one-leaved pseudo-bulbs, about 2in. apart. The leaves are 6in. to 10in. long, by about 2in. broad, and leathery in texture. Flower-spike 1ft. long, bearing many flowers, each 2in. across, full; sepals and petals rounded at the apex, crisp-edged, and coloured coppery brown, margined with yellow, and with a varnished appearance; lip broadening towards the apex, bright yellow, with a white crest and column. Introduced from New Grenada in 1847. The late Mr. Spyers, who grew this plant successfully, recommended that it should be placed on a teak raft and planted in peat and sphagnum, and that it should be hung near the glass in the cool house and be kept very moist all the year round.

Bateman's Monograph, t. 27.

Var. *chiriquense.*—Flowers larger and paler; sepals chestnut-brown.

Var. *miniatum.*—Pseudo-bulbs more crowded on the rhizome. Flowers smaller and more numerous on the spike.



ODONTOGLOSSUM CRISPUM

($\frac{2}{3}$ nat. size).

O. crispum.—This plant, better known under the names of *O. Alexandræ* and *O. Blunti*, is, perhaps, the queen of the whole of the Orchid family. By a little management its charming flowers may be had all the year round. It is a plant which varies very considerably, no two of the many thousands imported being exactly alike, and very marked differences in size, colouring, and form of the flowers are constantly presenting themselves. The pseudo-bulbs are about 3in. long, compressed, ovoid, and each one bears a pair of strap-shaped leaves 1ft. long. The flower-scape is arched, sometimes branched. Strong plants produce many flowers on a scape. Each pseudo-bulb bears only one scape. Each flower is from 2in. to 3in. across. In good typical forms the sepals and petals are white, ovate or ovate-lanceolate, the petals being much undulated, and often fringed or toothed; the lip is oblong-acuminate, yellow, and crested towards the base, beautifully crisped at the margin, and more or less spotted towards the front with blotches of reddish brown. This plant has been very largely imported from New Grenada, and in some of its forms is flushed with a lovely tint of rose. Few flowers are more deservedly admired, and the variety which is so characteristic of the species tends to enhance its charms, as all its forms are beautiful. It is a matter of regret that this cannot retain the name of the Princess of Wales, in honour of whom it was named by Mr. Bateman; but as O. Alexandræ proves to be but one of the many forms of the previously-known O. crispum, the latter name must take precedence. As many as 120 blossoms, in four racemes, have been produced by a single specimen. The original O. crispum is a plant of much earlier introduction. Karl Hartweg, who was sent to collect plants in New Granada for the Horticultural Society of London, found it in Bogota in 1841, with a spike 2½ft. in length, bearing from twenty to twenty-seven large flowers, the sepals of which were pinkish externally.

Plate (for which we are indebted to Mr. William Bull); Bateman's Monograph, ii., tt. 14, 19.

There are many named varieties of O. crispum, the most noteworthy among which are here described. Additional ones are being made known almost weekly.

Var. *aureum.*—Sepals and petals lemon-yellow, spotted with brown; lip yellow, with two brown spots near the crest.

Var. *Chestertoni.*—Sepals and petals broad, pure white, with reddish-brown blotches and spots; lip red-brown, with a margin of yellowish white.

Var. *Cooksoni.*—One of the best. Sepals and petals white, with broad patches of cinnamon-red; lip white, with a large blotch of crimson-brown and a few spots; crest golden yellow.

Williams' Orchid Album, iii., t. 118.

Var. *giganteum.*—Unusually robust in pseudo-bulbs, leaves, and flower-scape. Flowers nearly 5in. across, white, flushed with rose; segments very broad and fringed; lip large, with a long, recurved point, white, with a few brown spots.

Warner's Select Orchids, iii., t. 20.

Var. *Jenningsianum.*—Segments oval; margins of the petals deeply jagged, thickly spotted with brown on the lower half; sepals bearing a few red-brown blotches; lip with two or three red-brown spots in front of the crest.

Var. *limbatum.*—Sepals lance-shaped; petals rhomboid, acute, white, tinged with rose; edge of the lip marked with violet spots.

Var. *roseum.*—Sepals and petals deeply tinted with lilac-rose and sparingly spotted with brown; lip broad, white, freely spotted with brown.

Floral Magazine, ser. ii., t. 269.

Var. *Sanderianum.*—Flowers large, white, with broad port-wine-coloured blotches. A very fine variety.

Var. *Stevensii.*—Flowers full, 3in. across, white, heavily blotched with bright cinnamon. A magnificent variety.

Williams' Orchid Album, iii., t. 127.

Var. *Trianæ.*—Flowers large, full, white, tinged with rose; upper sepal with a large, red-brown blotch in the centre, the two other sepals having each three similar but smaller blotches; petals wholly white; lip large, blotched and spotted with red-brown.

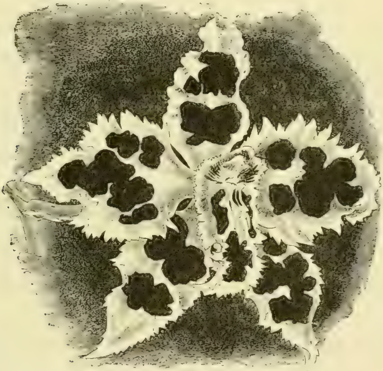


Fig. 80. Flower of Odontoglossum crispum Veitchianum
(⅔ nat. size).

Botanical Magazine, t. 5691.

Var. *Veitchianum.*—One of the handsomest of all. Flowers medium size, with broad, full segments, the edges of which are wavy, and the bases narrow; on the centre of each is a large, chestnut-brown blotch and several smaller ones, the ground-colour being delicate mauve with a broad border of white; lip white, with a few chestnut spots.

Fig. 80 (for which we are indebted to the Editor of the "Gardeners' Chronicle").

O. cristatum.—In this little species the pseudo-bulbs are somewhat oval, of a light shining green, bearing very narrow leaves of the same hue. The flowers are creamy yellow, varying in shade in the different forms, and banded or spotted with very dark brown or purple. The great prominence of the processes upon the lip, which is yellow or white, with a few brown spots, has given rise to the specific name. The flowers have in the evening a faint odour of meadowsweet. A native of Peru.

Illustration Horticole, 1870, t. 21.

Var. *cristatellum.* — Flowers larger; lip yellow and brown. Syns. *O. cristatellum*, *O. Lehmanni.*

O. Edwardi.—The colour of the flowers of this species is an exceptional one, no other Odontoglossum being at all like it. Being easily cultivated, and a ready plant to bloom, it has become a very popular Orchid, although its flowers are rather small. The pseudo-bulbs are 4½in. long, ovoid, and two-leaved. The leaves are 1ft. or more long. Flower-spike almost erect, very stout, branched, and crowded with flowers, each 1in. across. All the segments are about equal in size and form: they are oblong, wavy, and coloured violet-purple or puce, except the crest, which is yellow. Introduced from Ecuador, and flowered for the first time in England in 1880. It requires cool treatment, and plenty of water when growing. It usually flowers in early spring.

Botanical Magazine, t. 6771.

O. grande.—At once one of the most beautiful, the largest, the best-known, and the easiest-grown of Odontoglossums. It has stout, very dark bluish-green pseudobulbs, each bearing two or three broad, leathery, dark green leaves, covered beneath with minute, black dots. The flowers are from 4in. to 7in. in diameter, and are borne upon short, erect scapes, usually from three to five blossoms, sometimes more, being produced upon each. A plant has been grown with as many as thirty flowers open at the same time. The sepals and petals are rich glossy yellow, the basal half being transversely banded and blotched with bright chestnut-brown, the blossom is not unfrequently called the Tiger-flower) ; the lip is creamy white, more or less freckled with brown. The plant blooms during winter, and may be kept in the drawing-room whilst in flower without injury. It thrives best when kept in the Cattleya-house in winter, and in the cool-house during the summer. It was introduced in 1839 by Mr. Skinner, who found it in a dark ravine near the city of Guatemala, at a temperature of between 60deg. and 70deg., where it had abundant moisture and shade. When imported, it is often associated with masses of fern and other shade-loving plants.

Bateman's Monograph, t. 8.

Var. *splendens.*—A beautiful variety, at present rare in collections; it differs from the type in having purplish-brown markings, and a nearly white lip with pure purplish bars.

O. Hallii.—This is considered the best of the Odontoglossums found in Ecuador. It has long, thin, narrow pseudo-bulbs, with acute edges, and furrowed. Each pseudo-bulb produces two leaves, which are about 1ft. long. The scape is from 3ft. to 5ft. long, arching, branched, and many-flowered. The flowers are 3in. to 4in. across; the sepals and petals are pale yellow, with large, chocolate-brown patches and spots, and are remarkable for their long points; the lip is pure white, with a beautifully-fringed margin, and is spotted and blotched with red, and stained towards the base with deep yellow. This species requires cool treatment, flowering in March and April. There is considerable variation in the depth of colour and spotting of the flowers, but

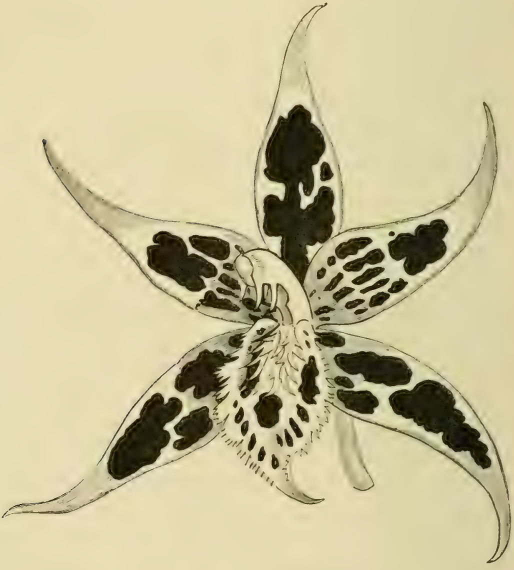


Fig. 81. Flower of Odontoglossum Hallii
(nat. size).

there is not one variety which may not be ranked with first-rate Orchids. Introduced in 1864.

Fig. 81; Bateman's Monograph, t. 21.

O. Harryanum.—A recent discovery, and one of the handsomest and most distinct of Odontoglossums. Its pseudo-bulbs are oval-oblong, compressed, furrowed when mature, 3in. long, two-leaved. The leaves are leathery, and a little less than 1ft. in length. Flower-spikes erect, the same length as the leaves,* few-flowered; flowers very variable in size, structure, and colour; sepals oblong, with short-pointed tips, wavy, chocolate-brown, with broad, vein-like streaks of yellow; petals white at the base, with broad, irregular lines of purple; lip large, roughly

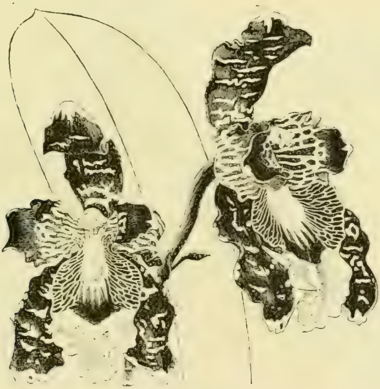


Fig. 82. Flowers and Portion of Leaf of Odontoglossum Harryanum (½ nat. size).

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* It has been stated that the flower-spikes of this species attain a length of 2ft. to 3ft.

triangular, white, with numerous streaks of purple, the apical portion wholly white; crest yellow. Introduced in 1886. So far the imported plants have bloomed at various times. The species is evidently an extremely variable one, many very distinct and beautiful forms having already flowered. It should be grown in the cool end of the Cattleya-house, and be kept fairly moist.

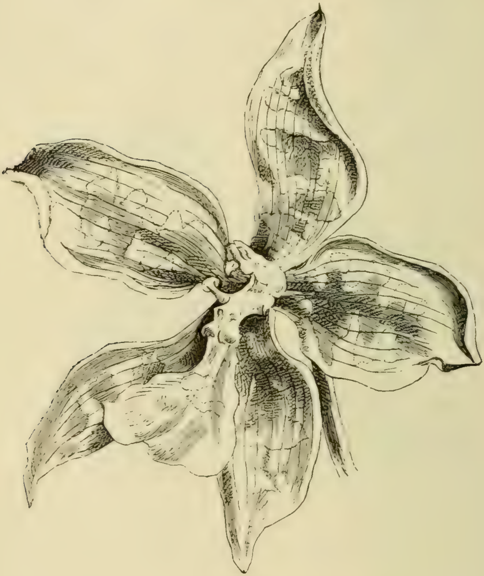


Fig. 83. Flower of Odontoglossum hastilabium
(nat. size).

Fig. 82 (for which we are indebted to the Editor of the "Gardeners' Chronicle").

O. hastilabium.—This is a spring-blooming plant, lasting in blossom about two months. It has large, pale, shining green pseudo-bulbs, and broad leaves 1ft. long. The spike is 2ft. to 3ft., or sometimes even as much as 6ft., in height, and much-branched, with numerous very fragrant blossoms, which are about 3in. across; the sepals and petals are of a soft creamy white, beautifully streaked with transverse lines of purplish brown; whilst the somewhat halbert-shaped lip is white, with a dark rose base. A native of New Granada, where it was discovered in 1843, at the comparatively low elevation of 2500ft.; it extends upwards, however, to between 4000ft. and 5000ft. This stately species should be grown in the Cattleya-house, or, at any rate, in a house about 7deg. warmer than the cool species require.

Fig. 83; Bateman's Monograph, t. 7.

Var. *fuscatum* is distinguished by the sepals and petals being uniformly brown within. Introduced from Venezuela in 1856.

Botanical Magazine, t. 4919.

O. hebraicum.—This has prettily-marked flowers, and is of supposed hybrid origin, O. odoratum being one of its parents. In pseudo-bulbs, leaves, and spike, it is like O. odoratum, but the spike is more branched and crowded. The flowers are 2½in. across, with lance-shaped petals and sepals, the latter being spotted with red-brown, whilst the markings on the petals are singularly suggestive of Hebrew characters; the lip is yellow, streaked at the sides with red. The flowers are developed in summer. Introduced from New Granada in 1879.

Williams' Orchid Album, v., t. 194.

O. Insleayi.—The pseudo-bulbs, leaves, and flower-spike of this are similar to those of O. grande. The flowers are from 2in. to 4in. across; the sepals and petals are oblong, wavy, yellow, transversely banded with dull reddish brown; the lip is spoon-shaped, bright yellow, dotted near the margin with cinnamon. This species is a native of Mexico, whence it was introduced about 1840. It was then lost to collections for about twenty years, and, as Mr. Bateman observes, "its re-appearance is entirely due to the adoption of the rational system of cool treatment now prevailing, under which it may be cultivated with the greatest ease." It blooms at various times of the year, but mostly in the autumn.

Bateman's Monograph, t. 4.

Var. *leopardinum.*—Sepals and petals deep yellow, barred across with bands of reddish crimson; lip rich yellow, beautifully bordered all round with spots and dots of the same dark colour.

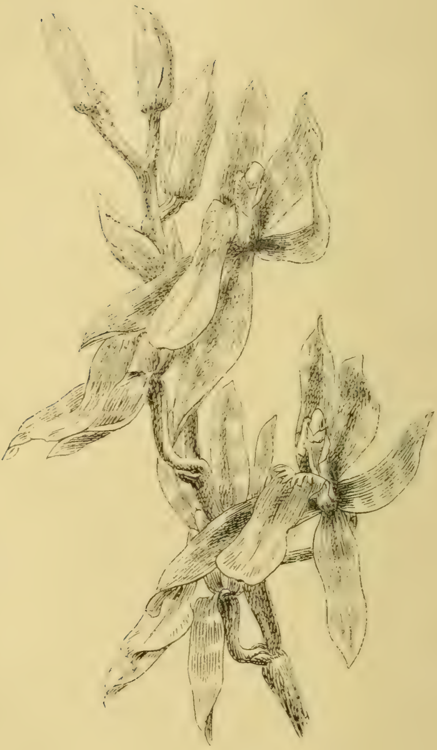
Var. *pantherinum.*—Sepals and petals broad, chestnut-brown, with paler margin; lip red and yellow.

Var. *splendens.*—Flowers very large, of a uniform ochre-yellow, except the lip, which is zoned with red blotches.

Sander's Reichenbachia, t. 7.

O. Krameri.—A small plant, with almost round, compressed pseudo-bulbs 1½in. in diameter, and bearing each only one leaf, which is about 8in. long. Flower-spike short, three- to five-flowered; flowers 1½in. across; sepals and petals similar, pale violet in the centre, shading off to white at the margin; lip with a two-lobed apex, purplish in colour, with streaks of white and brown at the base; column white. A rare plant, although introduced in 1868 from Costa Rica. It should be grown in the Cattleya-house, suspended near the roof-glass; and it enjoys liberal supplies of water, except when at rest in winter.

Bateman's Monograph, t. 24.



FLOWERS OF ODONTOGLOSSUM LÆVE

(nat. size).

O. læve.—This is interesting chiefly on account of the fragrance of its flowers. It is a robust grower, producing stout scapes often 3ft. long. The flowers are 2½in. across, cinnamon-brown, barred with dull yellow; lip broad, with a tail-like tip, lilac, and white or pale rose. It flowers in spring. Introduced from Mexico in 1841. It thrives under the same treatment as O. crispum.

Plate; Bateman's Monograph, t. 15.

O. Lindleyanum.—A very variable species, supposed to be one of the parents of some of the so-called natural hybrids. It resembles O. crispum very closely in every character except the flowers, which are somewhat thin, 2in. to 3in. across; the sepals and petals are yellow, with a few reddish blotches; the lip is three-lobed, the two lateral lobes being small, white, with purple spots, and the middle lobe red-brown, tipped with yellow. A native of New Granada. It thrives if grown with, and treated the same as, O. crispum, flowering in spring.

Bateman's Monograph, t. 11.

O. Londesboroughianum.—A distinct plant, handsome when well grown, but, as a rule, unsatisfactory under cultivation. Its stout, creeping rhizome bears ovoid pseudobulbs 3in. apart, and two-leaved. The spike is 3ft. long, branching, and bears, in the autumn, numerous bright yellow flowers 1in. across, full, and sometimes marked with concentric lines at the base. Although introduced in 1876, and frequently since then, this plant has not been a success under cultivation. It is said to require exposure to full sunshine, a high temperature in summer, plenty of water whilst growing, and drought when at rest. It should be planted on a raft or in a shallow basket. When at rest it loses its leaves.

Williams' Orchid Album, t. 82.

O. luteo-purpureum.—In this species we have a plant of robust habit, and extremely variable both in size of flowers and in the intensity of their markings—so much so that hardly two specimens are alike. Its pseudo-bulbs, leaves, and habit, are as in O. crispum, but stronger. Flowers from 3in. to 4in. across; sepals and petals equal, rich brown or purple, blotched and banded with white or light yellow, and having a golden-yellow border; lip white, with a brown base, minutely serrate or fringed. This species blooms during winter and spring, and may be grown along with O. crispum. It is a native of mountain regions in New Granada, at an elevation of 8000ft. or more.

Illustration Horticole, 1871, t. 73.

"As a species, O. luteo-purpureum is one of the most variable known, a circumstance to be partly accounted for by the large area over which it is spread, and by its intermixture with other species, which has resulted, not only in the production of natural hybrids, but also from them and their parents has sprung an exceedingly mixed progeny. . . . . The most constant of these forms are *amplissimum*, *cuspidatum*, *facetum*, *Hinnus*, *Mulus*, *sceptrum*, *Vuylstekianum*" (Veitch). The chief characteristics of these varieties are as follow:

Var. *amplissimum.*—Sepals and petals very broad, pale yellow, with cinnamon-brown blotches.

Var. *cuspidatum.*—Sepals and petals narrow, yellow and brown; lip wavy, pale yellow, with a large, square, chestnut-brown blotch in the centre.

Var. *facetum.*—Flowers curiously blotched and spotted, with crimson markings at the base of the petals.

Var. *Hinnus.*—Sepals and petals narrow and undulate; lip rhomboid, with a many-toothed crest.

Var. *Mulus.*—A grand form, with long, pointed sepals and petals, large blotches, and a large, fiddle-shaped lip.

Var. *sceptrum.*—Flowers smaller than in the type, beautifully marked with deep brown on a golden ground; lip with a large, horseshoe blotch in front.

Var. *Vuylstekianum.*—Flowers smaller than in the type; colour a beautiful mixture of nankeen-yellow blotches on a sulphur-yellow ground.

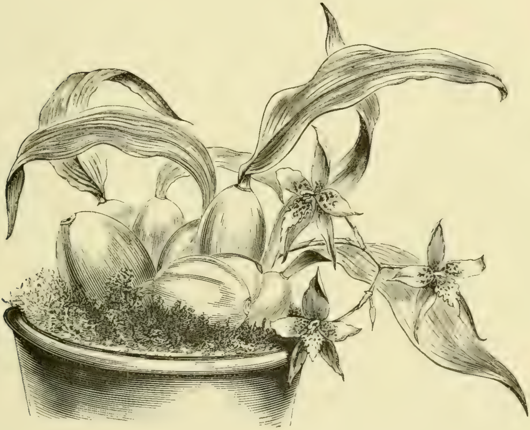


Fig. 84. Odontoglossum maculatum
(much reduced).

O. maculatum.—Although surpassed in beauty by many newer kinds, this old garden plant is still worth cultivating. In pseudo-bulbs, leaves, and spike, it closely resembles O. cordatum; but it differs from that species in having shorter and broader sepals and petals, and a more rounded lip, which is yellow, spotted with brown. The flowers are usually developed in March and April, and they remain for a considerable time in full perfection. This species is common in many parts of Mexico, where it was one of the earliest kinds discovered; it was introduced in 1838. Syns. *O. anceps*, *O. Luddemannianum.*

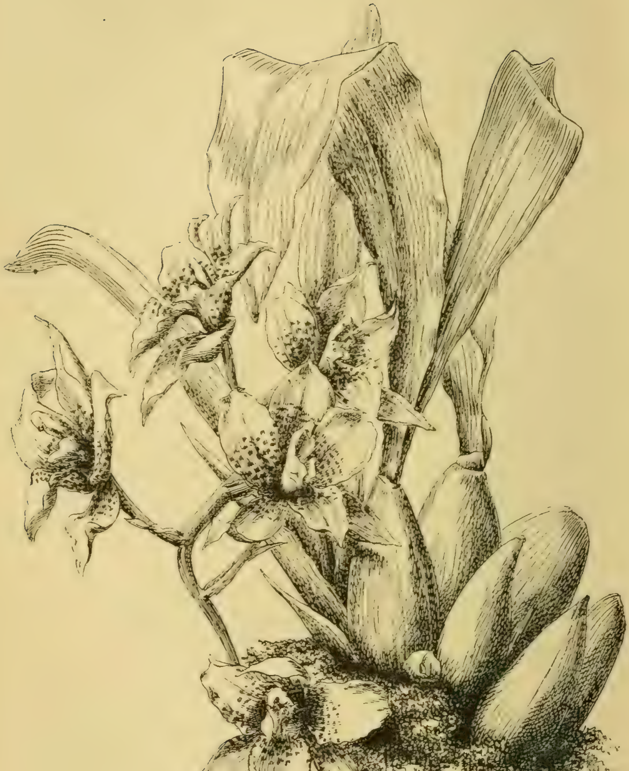
Fig. 84; Bateman's Monograph, t. 20.

O. maxillare.—A rare and pretty species, with narrow, thin pseudo-bulbs, 4in. long, and two-leaved. The leaves and spike are about 10in. long, and the flowers are arranged in two series, usually about ten on a spike; they are fragrant, 2½in. across; the sepals and petals are lance-shaped, and keeled at the back, white, purplish at the base; the lip is shorter than the petals, with a narrow, yellow base, and a trowel-shaped, white blade. The flowers are similar to those of O. Cervantesii. Introduced from Mexico in 1872. It should be grown in a warm corner of the cool house in summer, and wintered with the Cattleyas. Syn. *O. madrense.*

Botanical Magazine, t. 6144.

O. mirandum.—This is very similar to O. Coradinei, but more robust in growth, and with brighter-coloured flowers; it also differs in having the sepals and petals almost wholly red-brown, except the margins, which are yellow; the lip is similarly marked, with the addition of a few purple lines at the base. Introduced from New Granada; first flowered in England in 1882. It requires the same treatment as its near relatives O. crispum and O. triumphans.

O. nævium.—Judging from the few examples hitherto imported, this beautiful species would seem to be rare in its native habitat, the Andes of New Granada. The pseudo-bulbs are oblong, flattened, and deep green. The leaves are oblong and narrow, and of the same colour. The



ODONTOGLOSSUM NEBULOSUM

($\frac{1}{2}$ nat. size).

scape is erect, bearing an arching panicle of numerous somewhat star-shaped flowers; the sepals and petals are about 2in. long, and beautifully crisped or waved, the ground-colour being white, profusely speckled and spotted with rosy-purple and crimson markings (whence the name *nævium*, or freckled). This species delights in a cool, moist atmosphere all the year round. It was discovered in New Granada in 1842, at an altitude of 8000ft.

Warner's Select Orchids, t. 7.

Var. *majus* is the best variety; it is larger, and more compact in habit, and is one of the rarest of the genus.

Bateman's Monograph, t. 9.

O. nebulosum.—A free-growing kind, which produces its beautiful flowers in May and June. Pseudo-bulbs large, two-leaved. Leaves 9in. long by 1in. broad. Flower-scape stout, as long as the leaves, and producing from three to seven flowers, which are each 3in. across and snowy white, except at the base of the sepals and petals, where they are prettily spotted with cinnamon-brown. A native of Mexico, where it grows at a height of 10,000ft., in exposed situations. It should be grown in a cool house, and be kept moist at the root all the year round.

Plate; Bateman's Monograph, t. 1.

There are several named varieties of this species, one, called *candidissimum*, being wholly white, and another, named *pardinum*, unusually profusely spotted.

O. odoratum.—A somewhat variable species. The flowers resemble those of O. nævium in shape, and, as the name implies, they are very fragrant. The scape is erect, branched, and many-flowered. The sepals and petals are dull yellow, spotted and blotched with chocolate-brown, the edges being wavy; the lip is white, with a large, purple blotch. This species is supposed to be one of the parents of many of the natural hybrids which have been introduced, such as O. hebraicum, O. baphicanthum, &c. It blooms at various times, but mostly in winter and spring. It is a native of New Granada and Venezuela, and should be grown in the cool house. Syn. *O. gloriosum.*

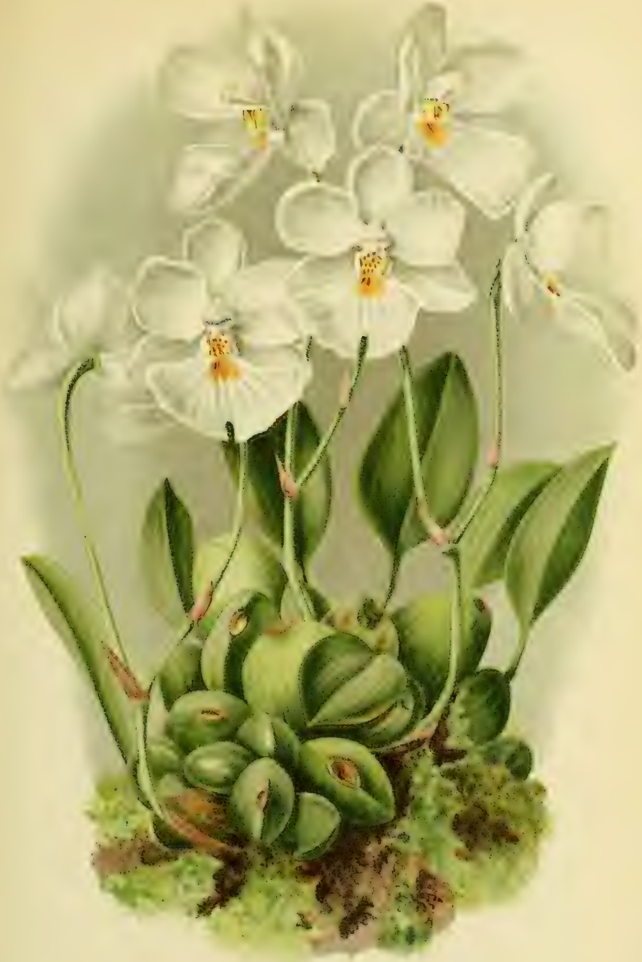
Illustration Horticole, 1870, t. 39.

O. Oërstedii.—A small but exceedingly pretty species, with roundish, compressed pseudo-bulbs, bearing only one leaf, which is about 4in. long. The spikes are short, erect, one- or two-, rarely four-, flowered; flowers 1½in. across, full, pure white, except a yellow spot on the base of the lip, which is broad and irregular-edged. Introduced from Costa Rica in 1872. It flowers in the spring months. This little gem is found wild on mossy tree-trunks in constant moisture, where the temperature gets low at night. Under cultivation, it thrives when planted in shallow pans, and suspended close to the roof-glass in a cool, moist house.

Coloured Plate; Botanical Magazine, t. 6820.

Var. *major* has large flowers, of good substance, and usually produced in fours on a spike.

O. Pescatorei.—This species is justly considered one of the most lovely of the whole genus. It has the habit of O. crispum, but the pseudo-bulbs are smaller. The flower-spikes are long and arching, usually branched, sometimes bearing upwards of fifty, or even a hundred, flowers; the sepals and petals are snow-white, although varieties sometimes occur in which a shade of rose is to be found; the lip is fiddle-shaped, white, blotched at the base with purplish crimson and yellow. The flowers are so chastely beautiful that we would choose this amongst the first in forming a collection; they last a long time in perfection. The plant blooms at various times, but usually



Chromolith. G. Severeyns

ODONTOGLOSSUM OËRSTEDII.

[illegible]

during April and May. We have seen a form of it with flowers which measured 5in. across. The species was discovered in 1847, in the oak forests of New Granada, at an elevation of about 8000ft., whence it was introduced about 1851. The specific name commemorates a French orchidologist, M. Pescatore, whose collection was at one time considered the finest in Europe; he died in 1855. Syn. *O. nobile.*

Bateman's Monograph, t. 5.

The varieties of this species are numerous, some being of exceptional beauty and value. The best of them are here given:

Var. *Veitchianum.*—Flowers larger than in the ordinary forms, very symmetrical, and irregularly blotched with rich magenta-purple.

Var. *Schrœderianum* is similar to var. Veitchianum.

Var. *Vervaetianum* is another richly-marked kind.

There is considerable variation in the markings of the flowers, some being tinged with rose or purple, others streaked, whilst in the number of spots the range is from a solitary one on the lip to numerous blotches all over the segments. All these should be cultivated in the same manner as O. crispum.

O. polyxanthum.—A robust and handsome kind, similar to O. Hallii in pseudo-bulbs and foliage. Flower-spikes 2ft. long, arching, and branched; flowers 3in. across; sepals and petals broad, acute at the points, lemon-yellow, with red-brown blotches; lip oblong, with a crisped edge, red-brown, bordered with yellow; column white, with brown blotches. A native of Ecuador, whence it was introduced in 1878. It flowers in April and May, and requires cool, moist treatment all the year round.

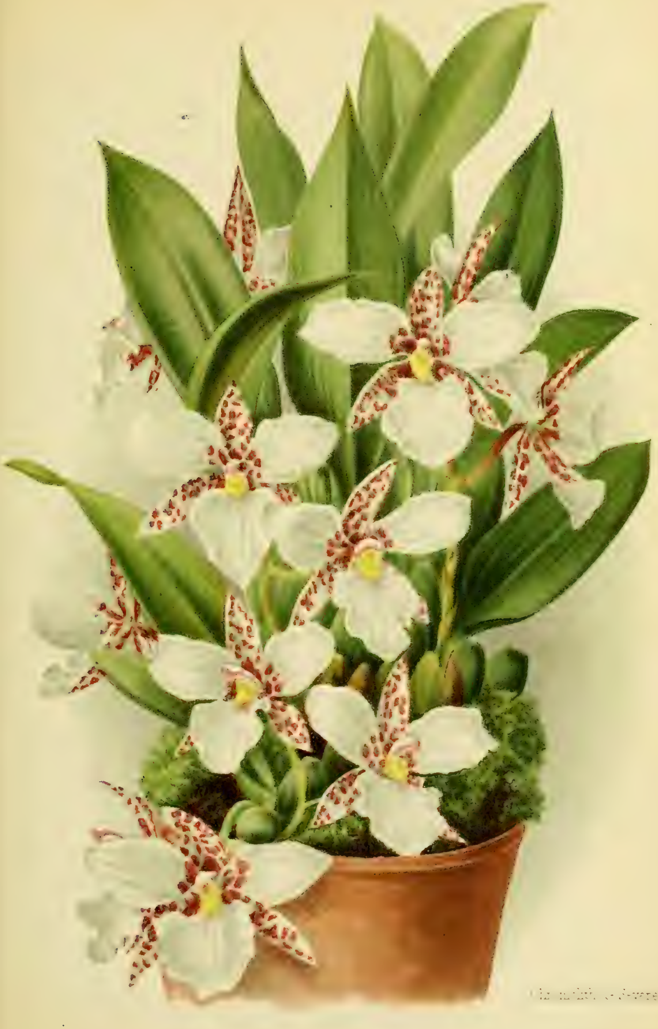
Williams' Orchid Album, vi., t. 258.

O. pulchellum.—A distinct and pretty little kind, with pure white, deliciously fragrant flowers. Pseudo-bulbs long, narrow, thin, and two-leaved. Leaves grass-like, rather stiff, 9in. to 12in. long. Flowers borne on erect spikes, suggestive of lily of the valley. There is a small, yellow blotch on the crest of the lip. The flowers are more fragrant at night than in the day, and are developed in spring, lasting about six weeks. This charming little Orchid is easily grown, and never fails to flower. It prefers cool treatment, but may be grown along with Cattleyas; it likes plenty of moisture. Owing to the erect habit of the spikes, the flowers are arranged with the lip uppermost, and appear to be upside down. Introduced from Guatemala in 1840. Syn. *O. Egertoni.*

Bateman's Monograph, t. 5.

O. ramosissimum.—A distinct plant, with oblong, flattened pseudo-bulbs, bearing each a single leaf about 1ft. in length. Spike 3ft. or more long, branching, and bearing numerous flowers 2in. across, with narrow, wavy sepals and petals, and a narrow, reflexed lip; the colour is pure white, spotted with pale purple. Introduced from New Granada in 1871. It should be grown in the cool house, where its flowers are developed in March and April. The pretty, graceful flowers have been likened to large spiders.

O. Rossii.—This is one of the best and most popular of the smaller kinds. It grows and blossoms freely, and its beautiful and lasting flowers are produced during the winter months. It may be grown in an ordinary greenhouse along with O. crispum, &c. If we had to make a selection of six Odontoglossums, this would certainly be one of them. It has small pseudo-bulbs, with one short leaf each. The spikes are 6in. long, and bear two to five flowers, each



Chromolith. G. Severeyns.

ODONTOGLOSSUM ROSSII

REDUCED

3in. in diameter; the sepals and petals are white or rose-tinted, the sepals spotted all over, the petals only at the base, with deep brown spots; the lip is large, somewhat heart-shaped, and pure white. A native of Mexico; introduced in 1842.

Coloured Plate; Fig. 85; Botanical Register, xxv., t. 48.

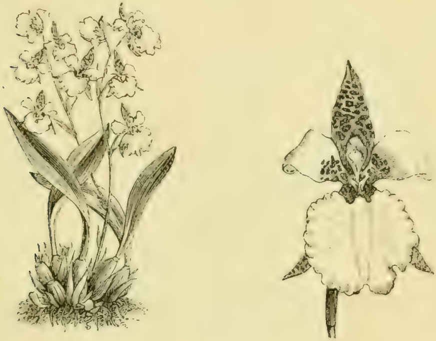


Fig. 85. Odontoglossum Rossii, showing Habit and detached Flower
(Habit, much reduced; Flower, ½ nat. size).

Var. *aspersum.*—Flowers primrose-yellow, with chestnut-brown spots.

Var. *Ehrenbergii.*—A small-flowered and poor variety.

Var. *Humeanum.*—Sepals yellow, with cinnamon-red bars; parts of the flower narrower than in the type.

O. Sanderianum.—This free-flowering species is chiefly remarkable for its delicious, hawthorn-like fragrance. The pseudo-bulbs are ovoid, compressed, two-leaved; the leaves rather narrow, about 1ft. long. Flower-spikes drooping, bearing numerous rather small flowers, with narrow sepals and petals, which are yellow, blotched with brown; lip white or pale yellow, with a large, purple blotch in front. Introduced from Caracas in 1881. The flowers are produced in early spring. It should be grown in the cool house, and always be kept moist.

O. Schlieperianum.—A very useful species. In habit of growth and general appearance it resembles O. grande; but the flowers, though like those of that species in form, are different in colour; they are borne upon erect scapes, several together, and are pale yellow, blotched and barred with a deeper shade of the same colour, or almost reddish brown. A native of Costa Rica; introduced in 1856. It requires the same treatment as O. grande. Syn. *O. Insleayi* var. *macranthum* (under which name it was described by Lindley).

Gartenflora, t. 605.

O. tripudians.—A well-marked and free-flowering kind, supposed to be of hybrid origin. In leaf-characters it resembles O. Pescatorei. The spike is arching, rarely branched, and the flowers are 2½in. across, chestnut-brown and yellow, the former colour being in blotches; lip white, with a jagged edge, sometimes blotched with rose. Introduced from New Granada in 1869. When wild it is said to flower all the year round, but under cultivation it usually blooms only in autumn. It is somewhat variable in the markings of the flowers, and is not always admired. It requires cool treatment.

O. triumphans.—A large-flowered, easily-managed species, one of the most popular of the genus. Pseudo-bulbs 3in. to 4in. long, two-leaved. Leaves 1ft. to 1¼ft. long, bright green. Scape arching, many-flowered, branched, and from 2ft. to 3ft. in length. Flowers 3in. to 4in. across, thick in substance; sepals and petals bright yellow, blotched with deep brownish crimson; lip oblong, with a narrow, tail-like tip, the edges toothed, the front portion being cinnamon-brown, and the basal half pure white, with a yellow centre; the crest, which is usually white, has two long teeth. The plant blossoms during March, April, and May. It should be grown along with O. crispum and O. Pescatorei, with which it is often found associated in a wild state. It is a native of New Granada, where it was discovered by Linden in 1842, at an altitude of 8500ft.; it does not appear, however, to have been in cultivation in England till about twenty-five years afterwards.

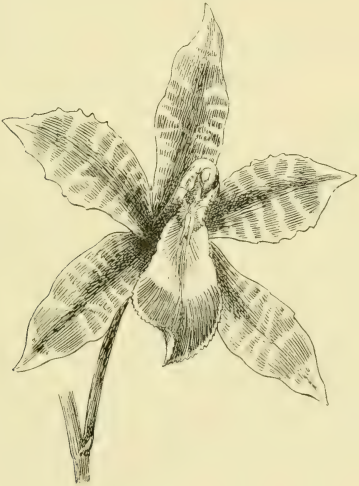


Fig. 86. Flower of Odontoglossum triumphans
(¾ nat. size).

Fig. 86; Bateman's Monograph, t. 23.

O. Uro-Skinneri.—A large-growing species, with stout pseudo-bulbs, bearing two large, strap-shaped leaves, and an erect flower-scape from 2ft. to 3ft. high. Flowers 2in. to 3in. across, chestnut-brown, mottled with green; lip pale rose, mottled with white. A native of Guatemala, whence it was sent by Mr. U. Skinner in 1854. It blooms in July and August, and requires cool treatment, with plenty of water.

Bateman's Monograph, t. 2.

CHAPTER XLV.

ONCIDIUM.

A VERY large number of epiphytes, exclusively natives of tropical America—being generally diffused from Mexico and the West Indies to Bolivia and Brazil—are included in this genus. Over 250 species have been described, but it is questionable if the whole of these are distinct. No less than 180 of the number are supposed to be in cultivation in Europe—a fact which goes to prove that a large proportion of the plants are sufficiently ornamental for the garden. There are, however, many which, on account of their want of size or attractive colours, do not call for description here. We have selected about thirty distinct species as representative of the genus, and as comprising all that are worthy of being classed among first-rate garden Orchids.

Botanically considered, the genus is, with few exceptions, a natural one, of well-marked characters, and easily distinguished from its allies, the Odontoglossums and the Miltonias. There are certainly links which connect these with each other, as, for instance, Odontoglossum aureum (called by some an Oncidium) and several others which are difficult technically to separate from Oncidium. With regard to Miltonia, Reichenbach himself proposed to merge that genus in Oncidium. For garden purposes, however, this would have been a mistake, and it has never been insisted on. The floral characters which distinguish Oncidium are the short and thick column, with its two ear-like appendages, the lip forming an angle with the column, the usually warty crest on the latter, and its generally large, spreading front lobe. In habit, size, and shape of pseudo-bulb, in form and size of leaves, and in form of inflorescence, there is considerable variation amongst Oncidiums. The blossoms also vary from very small to large and showy ones; the arrangement and relative sizes of the different parts of the flower are equally diversified, and the colour ranges from yellow (the predominating hue) to brown, purple, white, and green.

The charm of the Oncidiums resides in their generally huge spikes of bloom, their bright, attractive colours, and the beauty or peculiarity of the form of their flowers. The Butterfly Orchid (O. Papilio), with its singular form and rich colouration, so delighted the late Duke of Devonshire when he saw it in flower at Chiswick, soon after its first introduction, that he determined to form a special collection of Orchids at Chatsworth. This set the fashion of Orchid-growing which is now so prevalent. O. Lanceanum, O. macranthum, O. Marshallianum, O. tigrinum, and O. varicosum, are amongst the most effective Orchids grown for exhibition. Even the smaller and less showy kinds are possessed of beauty and interest which entitle them to a place in all good collections. Then the flowers remain fresh for a very long time, and are often fragrant.

Culture.—Their wide range of distribution, and the difference in regard to the climatic and atmospheric conditions in which they grow wild, make it impossible for gardeners to accommodate all the popular Oncidiums in one house. The few distinctly tropical species, represented by O. Jonesianum, O. Lanceanum, and O. Papilio, can only be grown in a hot, moist stove, where they must remain all the year. A considerable number of others require the temperature of the intermediate house, with moisture at all times. The great bulk of the cultivated species may, however, be grown in the cool house, or greenhouse, with treatment similar to that recommended for the Odontoglossums. The largest and most robust-growing species may be planted in well-drained pots or pans, in a mixture of peat and sphagnum. For others, pots, baskets, rafts, or blocks, are used, according to the supposed requirements of the different kinds. It is not, however, very material which plan is adopted, provided such important conditions as moisture, sweetness, ventilation, and freedom from insects, are not neglected. It is surprising how many Orchids will thrive without the aid of any compost whatever, finding nourishment in the atmospheric moisture and fresh air about them.

With few exceptions, the species selected for description here are not difficult to cultivate. Their special requirements are dealt with under the descriptions.

O. ampliatum.—This is a large-bulbed, leathery-leaved species, and when in good health it produces a magnificent inflorescence. The pseudo-bulbs are large, spheroid, compressed, bright green, with purple spots when young, becoming blackish purple and wrinkled with age. The leaves are 9in. long, 2½in. wide, glossy green, and leathery. The flower-spike, which springs from the base of the matured pseudo-bulb, is from 1ft. to 3ft. long, branched, and many-flowered. The flowers have small sepals and petals; the lip is spreading, reniform, wavy, 1½in. across, narrow at the base, with two small lateral lobes, and a prominent, two-lobed crest. The colour of the sepals is yellow, with red spots, and there are a few red spots about the base of the petals and lip, the rest being a bright yellow; the colour of the back of the flowers is much paler than that of the front. This species requires a tropical temperature, plenty of light, and moisture in moderation. It should be planted in well-drained peat and sphagnum, and may be grown either in pots, in baskets, or on blocks. It is a native of Central America, and was introduced in 1832. The flowers vary in size, those of a form called var. *majus* being half as large again as those of the type. Flowering season, March to May.

Botanical Register, t. 1699.

O. Brunleesianum.—A distinct and beautiful species, with the habit of O. sarcodes. It has erect, cylindrical pseudobulbs, each with a pair of oblong, acute, dark green leaves. The flowers are very numerous, on erect, branching spikes, 150 having been produced on one spike by the plant which first blossomed in England; the sepals and petals are almost equal, oblong, ½in. in length, not spreading as in the majority of Oncidiums, primrose-coloured; the petals are yellow, barred with brown; the lip, which is the showiest part of the flower, is three-lobed, the two lateral lobes yellow, folding and almost forming a tube, whilst the front lobe is tongue-like, recurved, and coloured a rich maroon. This remarkable plant was introduced by accident amongst some mixed Orchids brought by an engineer from Brazil in 1883. It flowered in 1885, and created quite a sensation amongst Orchid-growers. A portion of the plant was, it is stated, soon after purchased from its lucky possessor for 150 guineas. It blossoms in the spring, and requires the same treatment as O. sarcodes.

Williams' Orchid Album, v., t. 206.

O. candidum.—A very remarkable little plant, which until recently was known as *Palumbina candida*. It has flattened, oblong pseudo-bulbs smooth, one-leaved, 2in. long. Leaves ensiform, 6in. to 9in. long, ½in. wide, keeled and sharp-pointed. Flower-spikes developed with the new growth, erect, wiry, about 1ft. long, usually six-flowered; each flower is about 1½in. long; upper sepal ovate, concave, ½in. long, the two lower ones united, also concave; petals ovate, ½in. long, flat; lip almost triangular, ½in. by ¾in., the crest almost lost in the base of the column. The colour of

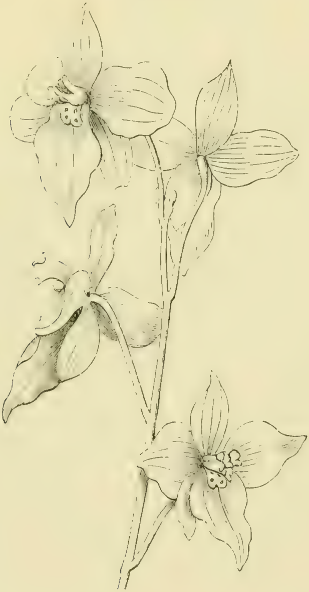


Fig. 87. Flowers of Oncidium candidum
(nat. size).

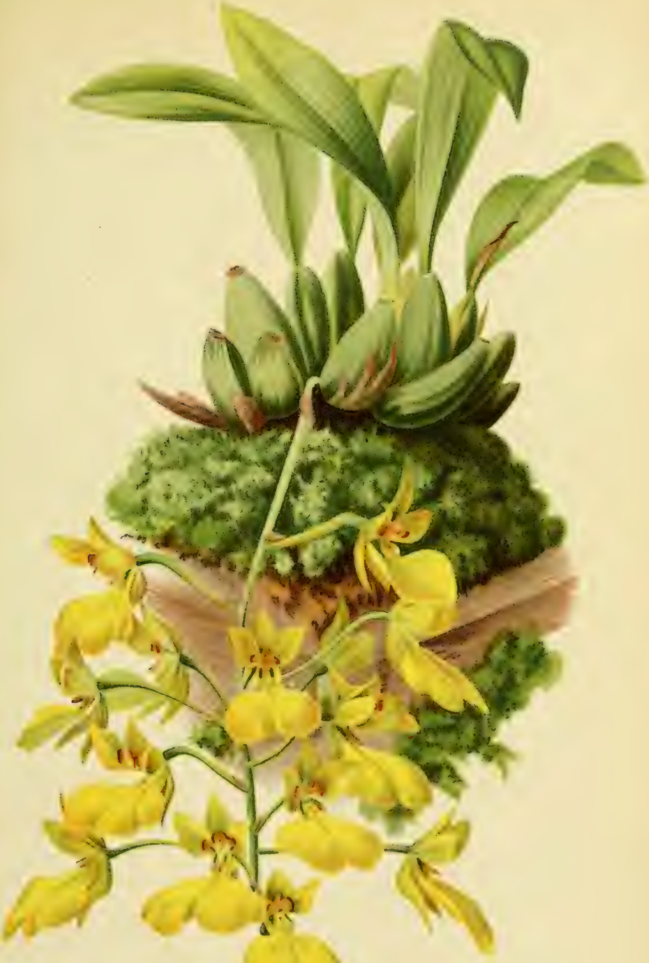
the whole flower is white, tinted with purplish rose. Botanically, this is one of the most interesting of Oncidiums; it is also sufficiently ornamental to be included in good collections. It thrives under cool treatment, and should never be rested. Introduced from Mexico in 1843.

Fig. 87; Botanical Magazine, t. 5546 (as *Palumbina candida*).

O. cheirophorum.—A charming little plant, with small, sweet-scented flowers, on elegant scapes. The pseudo-bulbs are 1in. long, ellipsoid, compressed, smooth, wrinkled when old. Leaves about 5in. long, narrow, grass-like, bright green. Scape very slender, 6in. to 9in. long, freely branched, and crowded with bright yellow flowers, each less than ½in. across; sepals and petals nearly equal, almost round, reflexed, concave; lip much larger than the other parts, three-lobed, with a central callus of irregular form; column thick, conspicuously winged. This is one of the most popular of the small-flowered Oncidiums. It thrives in a cool, moist house, such as suits Odontoglossum crispum. Small pans filled with peat-fibre, sphagnum, and crocks, suit it best, and it should be hung close to the roof-glass. It is a native of New Granada, whence it was introduced about 1856. It blossoms in December and January.

Botanical Magazine, t. 6278.

O. concolor.—One of the most attractive of yellow-flowered cool-house Orchids, its graceful, pendent racemes of bright-coloured flowers being particularly ornamental. The pseudo-bulbs are 1½in. long, oval, flattened, furrowed, sheathed at the base, and each bearing a pair of strap-shaped, pointed, bright green leaves, 6in. to 9in. long. The flower-scape is 1ft. or more in length, arched or pendent, and bears numerous flowers, each nearly 2in. across, and of a pure canary-yellow colour; upper sepal



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ONCIDIUM CONCOLOR

BRAZIL.

and two lateral petals 1in. long, ovate, and pointed; two lower sepals partly united and pointing downwards; lip nearly 2in. long, 1½in. broad, flat, slightly lobed, and having a pair of raised, reddish ridges running down into the base; column winged, tipped with orange. When planted in a basket or on a raft, and placed in a cool, moist house, this species grows freely, and blossoms profusely from April to June. It was introduced from the Organ Mountains, in Brazil, in 1837.

Coloured Plate; Botanical Magazine, t. 3752.

O. cornigerum.—An easily-grown, compact, free-flowering species, related, to O. curtum. Pseudo-bulbs sulcate, 3in. long, one-leaved. Leaf thick and fleshy, broadly ovate, 4in. long, dark green. Flower-spike thin, about 1½ft. long, branched and crowded with flowers on the upper half. Flowers bright yellow, with bands of red-brown, small, but sufficiently numerous to make a fine display; sepals and petals ⅓in. long, ovate, incurved; lip fiddle-shaped, with long, narrow side lobes, and a pair of projecting, horn-like processes at the base. Grown in a basket, and suspended so that the spikes hang down over the sides, this plant is really attractive. It requires a position in the Cattleya-house, and plenty of moisture at all times. It blossoms in April and May. Introduced from Brazil in 1829.

Botanical Magazine, t. 3486.

O. crispum.—An old favourite, and still one of the very best garden Oncidiums. It is easy to manage, blossoms freely, and is abundant enough to be always cheap. The pseudo-bulbs spring from a stout, creeping rhizome, and are broadly ovate, flattened, deeply furrowed, rough, and usually dark brown in colour. The leaves are in pairs, and are about 9in. long by 1½in. broad, leathery, deep olive-green. Flower-spike stout, arched, branched, bearing from twenty to fifty large flowers, each from 1½in. to 3in. across, and coloured deep shining brown, with a few yellow and reddish marks on the lower parts of the segments; sepals and petals large, oblong, narrow at the base, rounded at the apex, the margin crisped and wavy; lip almost circular, stalked, with two horn-shaped side lobes, and a three-lobed, warted, yellow crest; column yellow, with red wings. This plant may be grown on a block or raft, or in a basket, in the Cattleya-house. It

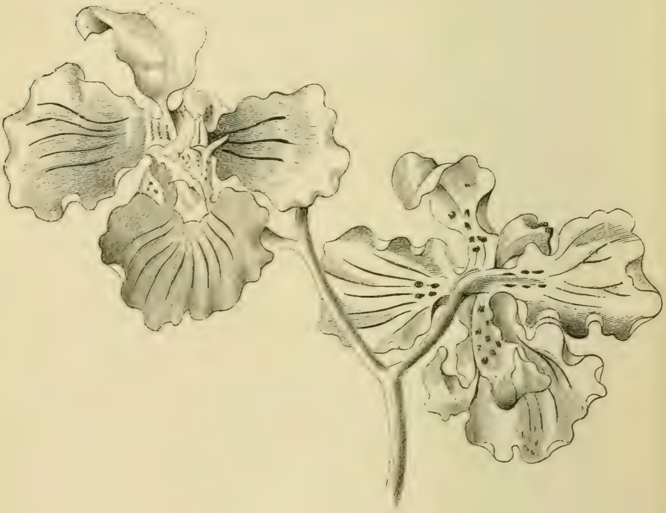


Fig. 88. Flowers of Oncidium crispum
(nat. size).

requires very little material about its roots. When growing, it enjoys abundance of moisture, with plenty of light; during winter it requires less water, but should never be dried. It blossoms at various seasons; the flowers last about a month. Native of Brazil, &c.; introduced about 1830.

Fig. 88; Botanical Magazine, t. 3499.

Var. *grandiflorum* has very large flowers, the segments being edged with yellow.

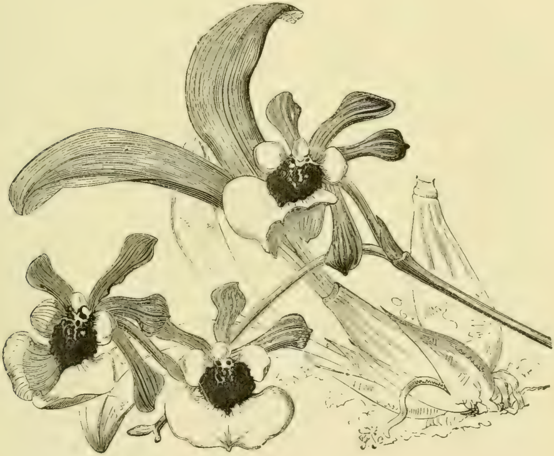


Fig. 89. Oncidium Crœsus
(nat. size).

O. Crœsus.—A small but pretty species, of tufted habit, and bearing flowers of pansy-like nature. It has narrow, sulcate pseudo-bulbs, 1in. long, with a distinct neck, supporting a pair of light green, strap-shaped leaves 4in. long. The flower-spike is semi-erect, shorter than the leaves, and bears from three to six flowers, each 1½in. across. Sepals and petals oblong, spreading, reddish brown, the margins recurved; lip three-lobed, the two lateral lobes being almost round, and the middle and larger one reniform, ¾in. across, rich golden yellow, with a large, eye-like blotch of black-purple about the prominent, toothed crest. This is a delightful little plant when well managed. When grown in the warm end of the Odontoglossum-house, or along with Cattleyas, and suspended near the roof-glass, it usually thrives; it should be planted in shallow pans or teak baskets, in a mixture of good peat and sphagnum, and it likes plenty of water and fresh air in summer. The blossoms are produced in July. Introduced from Brazil in 1872.

Fig. 89 (for which we are indebted to the Editor of the "Garden"); Botanical Magazine, t. 5193 (as *O. longipes*).

O. cucullatum.—A small but pretty-flowered Orchid, showing considerable variety both in form and colour. The pseudo-bulbs are oval, about 1½in. long, smooth, becoming furrowed with age, one-leaved. Leaf 6in. long, ¾in. wide, rather stiff, pointed, dark green. Flower-scape erect, wiry, 8in. to 12in. long, bearing from six to twelve flowers, each 1½in. across; sepals and petals small, oval, concave, rose-purple; lip large, spreading, two-lobed, the edges unbroken, with a small, fleshy crest, white or rose, and spotted with dark purple. The flowers are developed in spring, and remain fresh for a long time. This is one of the coolest of the Andean Orchids, and thrives best when planted in shallow pans or baskets, and kept in a well-ventilated, moist greenhouse. It likes moisture at the root always. A native of New Granada, where it is found at an elevation of 13,000ft.

Paxton's Flower Garden, iii., t. 87.

Var. *Chestertoni.*—Sepals and petals narrow; lip with two prominent side lobes and a long waist, and of a pale colour, with crimson spots.

Var. *flavidum.*—Sepals and petals yellow, with brown blotches; lip purple, margined with white.

Var. *macrochilum.*—This is larger in all its parts than the type, and the flowers are plum-colour, having a labellum of mauve, with violet spots.

Var. *nubigenum.*—Lip white, with a large, purple blotch about the crest.

Var. *Phalænopsis.*—A pretty variety, with flowers nearly as large again as those of the type; the parts being pure white, with purple blotches. Syn. *O. Phalænopsis.*

O. curtum.—An ornamental, free-flowering species, similar in habit to O. crispum, the pseudo-bulbs and leaves of these two being very much alike. The inflorescence is an erect, freely-branched panicle, bearing numerous flowers of medium size; sepals and petals similar, obovate-obtuse, wavy, yellow, with reddish bars and blotches; lip roundish, bilobed, nearly 1in. across, wavy, bright yellow in the middle, brown round the outside; crest lobed and warted, yellow, with reddish spots. The flowers are developed in spring, and remain in beauty for several weeks. The plant may be grown on a teak raft or in a basket, in a thin layer of peat-fibre and sphagnum, and placed along with O. crispum. A native of Brazil, whence it was introduced by Veitch in 1847.

Fig. 90 (for which we are indebted to the Editor of the "Garden"); Botanical Register, 1847, t. 68.

O. dasystyle.—An elegant little Orchid, the large, black-purple callus on the labellum being not unlike the distinguishing feature of our native Bee Ophrys. The pseudo-bulbs are oval, compressed, 1½in. long, at first smooth becoming furrowed with age, and each bearing a pair of keeled, bright green leaves 5in. by 1in. The slender scape springs from the base of the ripened pseudo-bulb, and is about 8in. long; it bears from three to five flowers, each

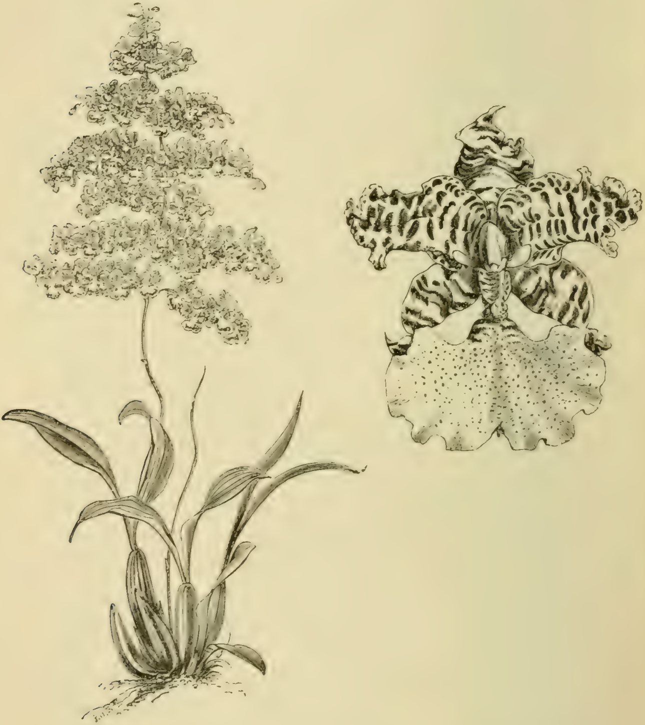


Fig. 90. Oncidium curtum, showing Habit and detached Flower
(Habit, much reduced: Flower, nat. size).

1½in. across. Sepals and petals nearly equal, ½in. long, pale yellow, with purplish blotches; lip spreading, kidney-shaped, with a short, stalk-like claw, the edges wavy, and the colour pale yellow; crest large and prominent, two-lobed, smooth, shining dark purple; column short, with a pair of rounded wings. Introduced from Brazil in 1873. This species should be grown on a block of soft wood, and a little sphagnum should be placed about its roots. It likes plenty of moisture whilst growing, but should be rested fairly dry. A position near the glass in the Cattleya-house suits it best.

Botanical Magazine, t. 6494.

O. excavatum.—A very handsome plant, of large size and of easy culture. Its pseudo-bulbs are from 3in. to 5in. long, ovate-oblong, compressed, shining green. The leaves are in pairs on the tops of the pseudo-bulbs, and there are also several from the base of each; they are 1½ft. long, 1½in. broad, leathery and shining. The stout, branched scapes are from 3ft. to 5ft. long, and bear a great number of bright-coloured flowers, each 1½in. across; the sepals are smaller than the petals, and alternate with them; the lip is three-lobed, with several broken ridges near the base forming the crest. The colour of the whole flower is rich golden yellow, with a few dark cinnamon spots on each segment. Strong plants of this species have produced as many as 100 flowers on one scape. Being a robust grower, it likes plenty of pot-room, liberal supplies of water at the root, and an ordinary greenhouse temperature. It was introduced from Peru about 1839. Syn. *O. aurosum.*

Fig. 91; Botanical Magazine, t. 5293.

O. flexuosum.—An old favourite, and one of the easiest of Oncidiums to cultivate. It has ovate, flattened, furrowed pseudo-bulbs, 2in. long, each bearing two oblong or strap-shaped, bright green leaves, about 6in. long. Flower-spike large, branching, many-flowered. Flowers scarcely 1in. across; sepals and petals very small, recurved, yellow, with chestnut bars; lip yellow, with a few reddish freckles, $\frac{3}{4}$in. across, reniform, with a narrowed base, a pair of short lateral lobes, and a prominent, warted, cushion-like crest. This species flowers freely at various seasons, and the blossoms remain fresh for several weeks. It should be planted in a pot or basket, in peat-fibre and sphagnum,

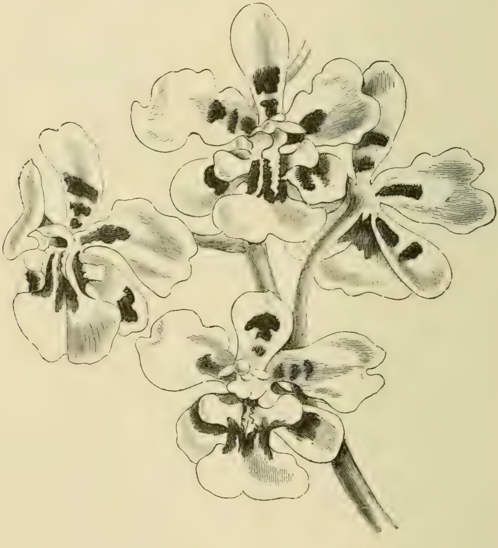


Fig. 91. Flowers of Oncidium excavatum (nat. size).

and be kept constantly moist. It grows and flowers regularly under cool treatment. Introduced from Brazil in 1818.

Botanical Magazine, t. 2203.

There are several varieties of O. flexuosum, which differ from the type here described in being larger-flowered or more copiously spotted.

O. Forbesii.—This is one of the most ornamental of all Oncidiums, but it is unfortunately rare in cultivation. The somewhat similar species O. crispum is often grown under this name. O. Forbesii has oval, flattened, furrowed pseudo-bulbs, with brownish basal sheaths and leathery, dark green, strap-shaped leaves about 9in. long. The scape is about 1ft. long, branched, and crowded with flowers each 2in. across; sepals ovate, ½in. long; petals 1in. long, tongue-shaped, wavy, with a stalk-like base; lip three-lobed, 1in. long, the side lobes small, the other spreading, fan-shaped, and wavy. The colour of the whole flower is rich, glossy, reddish brown, with an irregular margin of yellow; the tubercled crest is spotted with red. Introduced from Brazil to the Duke of Bedford's collection at Woburn in 1837, and named in compliment to his gardener, Mr. Forbes, who was one of the most skilful Orchid-growers of his day. It should be fastened to a block of soft wood, and be kept in a warm greenhouse. The blossoms are produced in autumn, and remain fresh a long time. "This species is far more variable than the good old O. crispum, and even than O. prætextum" (Rchb. f.).

Botanical Magazine, t. 3605.

O. Gardneri.—A handsome species, with moderately large flowers, very near O. Forbesii and O. curtum, from which it differs in the form and crest of the lip, and in having very small column-wings. It has oblong-ovate, furrowed pseudo-bulbs 2in. to 3in. long, and dark green, rather broad leaves, which are purplish on the under side. Flower-spike long, branching, many-flowered; sepals and petals 1in. long, broadly ovate, with short, stalk-like bases, the margins wavy, shining brown, with yellow edges; lip kidney-shaped, 1½in. across, very wavy, with two small basal lobes; colour bright yellow, with broad blotches of brown in a ring round the margin. The flowers, which last several weeks, are produced in summer, about July, and are fragrant. Placed on a teak raft or in a basket, in the cool house, this species grows well and flowers annually. It is found wild on forest-trees on the Organ Mountains, in Brazil, whence it was introduced in 1843.

Williams' Orchid Album, i., t. 12.

O. hæmatochilum.—A large-leaved, bulbless species, with an erect spike of brightly-coloured flowers. It is closely related to O. Lanceanum, and is almost as ornamental as that species. The leaves are oblong, flat, thick, stiff, 6in. to 9in. long, about 2in. broad, dark green, with dull brown spots. The flower-spike is erect, compact, 1ft. to 2ft. long, and bears from ten to thirty flowers, each 1¾in. across; sepals and petals equal, nearly 1in. long, spathulate, wavy, greenish yellow, with spots of rich cinnamon; lip narrow at the base, and eared, the front part spreading, oval, ¾in. wide, undulated, with a hump-like crest; colour bright crimson, with marginal spots of a deeper colour. This distinct plant requires the same treatment as is recommended for O. Lanceanum. It blossoms in November. Introduced from New Granada in 1847.

Williams' Orchid Album, i., t. 32.

O. incurvum.—A distinct and pretty-flowered plant, of easy culture. It is one of the best of the smaller-flowered species. The habit is similar to that of O. ornithorhynchum, but more robust. The pseudo-bulbs are ovate, compressed, furrowed, 2in. long, two-leaved. The leaves are ensiform, about 9in. long, acute-pointed, dark green. The flower-spikes are 3ft. or more long, much-branched, gracefully arched, and many-flowered; flowers 1½in. across; sepals and petals narrow, wavy, free, ¾in. long, white, banded

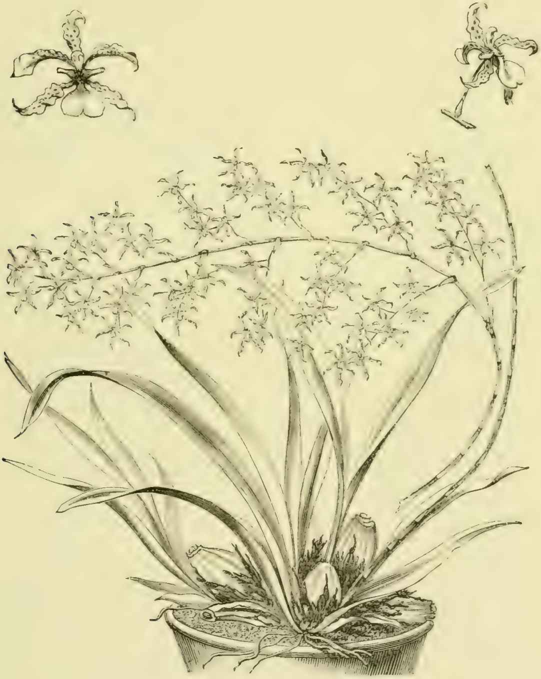


Fig. 92. Oncidium incurvum, showing Habit and detached Flowers
(Habit, much reduced; Flowers, ⅔ nat. size).

with rosy purple; lip three-lobed, narrow in the middle, the lobes concave, pure white; crest fleshy, five-toothed. The flowers are fragrant, and remain fresh for about a month. Well-grown examples of this species are not uncommon in collections, and when bearing their numerous spikes of pretty flowers in autumn are very ornamental. The plant requires cool-house treatment, thriving when grown in a pot of peat and sphagnum, and supplied with moisture at all times. A native of Mexico; introduced in 1845. Syn. *O. albo-violaceum.*

Fig. 92; Botanical Magazine, t. 4824.

Var. *album* has flowers wholly white.

O. Jonesianum.—A beautiful-flowered species, distinct in habit, and a very effective plant in every way. It has scarcely-perceptible pseudo-bulbs, and thick, fleshy, rush-like leaves, which usually hang downwards, and are from 3in. to 12in. long. The flower-spikes are developed from the base of the last-matured growth, and vary in length from 6in. to 2ft. The strongest spikes bear as many as a dozen flowers, each of which is 2in. across; sepals and petals equal, oblong, wavy, 1½in. in length, and coloured creamy white, with large spots of chestnut; lip large, broad, flat, with small, serrated, yellow side lobes, the blade white, with a few crimson spots towards the base; crest composed of numerous yellow tubercles. Considerable variety in the size and marking of the flowers characterises this species. When first introduced it was treated as a cool-house plant, but it thrives best when grown on blocks in a moist, tropical house, in a rather sunny position. Its flowers are developed at various times, usually in autumn and winter. Introduced from Paraguay in 1883.

Fig. 93; Botanical Magazine, t. 6982.

O. Lanceanum.—A beautiful, fragrant, and large-flowered species, but with a bad reputation as a garden plant. It has no pseudo-bulbs, the leaves springing directly from a stout rhizome. Each leaf is 1ft. or more in length, about one-fourth as broad, thick, leathery, green, thickly spotted with brown. The flower-spike is stout, erect, branched, 1ft. or more in height, and bears numerous flowers, which are from 2in. to 3in. across; sepals and petals equal, ovate, 1in. long, fleshy, yellow, barred and blotched with chocolate-brown; lip $1\frac{1}{2}$in. long, narrowed and waist-like in the

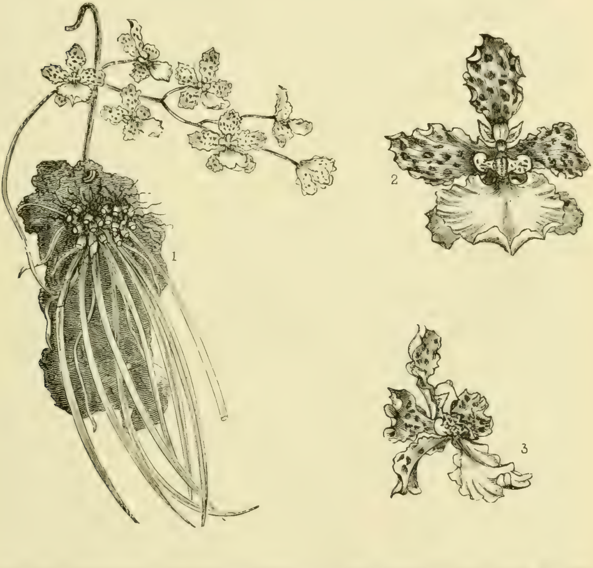


Fig. 93. Oncidium Jonesianum, showing (1) Habit, and (2) Front and (3) Side Views of detached Flowers
(Habit, much reduced; Flowers, $\frac{2}{3}$ nat. size).

middle, the apex spreading and flat, 1in. broad; colour variable, but usually rosy at the base and violet on the broad part. The flowers remain fresh about a month. The plant requires moist, tropical treatment, except during two or three winter months, when a dry position in the intermediate house is best. It should be planted in well-drained baskets or pans, in a mixture of peat and sphagnum. It likes a very high temperature whilst making new growth. Unfortunately, it is often badly affected by spot, and soon gets too weak to make good growth. It flowers usually in summer. A native of British Guiana; introduced in 1834.

Botanical Register, t. 1887.

O. leucochilum.—An old favourite, of noble habit, beautiful in flower, and showing considerable variation. Pseudo-bulbs ovate, flattened, furrowed, 2½in. long, one- or two-leaved. Leaves 9in. long, 1in. broad, pointed and recurved. Flower-spikes long, arching, panicled; flowers numerous, 2in. across, with equal sepals and petals, oblong in shape, 1in. in length, and coloured yellow-green, with blotches of dark brown; lip kidney-shaped, ¾in. across, with a red, stalk-like base, the blade two-lobed, pure white, turning to yellow with age, the two small lateral lobes also white; crest composed of several parallel ridges. The colours vary in different plants. This species blossoms at various times, and lasts for several weeks in beauty. It requires cool-house treatment, and, being a strong grower, thrives best when planted in a pot in a mixture of peat and sphagnum. It requires water all the year round. A native of Mexico and Guatemala; introduced in 1835. Syn. *O. digitatum.*

Bateman's Orchids of Mexico and Guatemala, t. 1.

O. macranthum.—This species ranks with the very best garden Orchids. It is a robust grower, thrives in a cool house, and produces long spikes of very large, ornamental, and remarkably-formed flowers in spring. Its only fault is its somewhat shy-flowering nature. The pseudo-bulbs are ovate, laterally compressed, 3in. to 4in. long, furrowed and wrinkled when old, two-leaved. Leaves leathery, strap-shaped, about 1ft. long, 2in. broad, acute-pointed. Flower-spike from 6ft. to 12ft. long, twining, strong spikes bearing as many as seventy flowers, each of which is 4in. across; sepals narrow at the base, then becoming broadly ovate, crisp and wavy, 1in. broad, and 1½in. in length, coloured bright yellowish brown; petals similar in shape, but broader, and coloured rich golden yellow; lip small, triangular, leathery, purple, with a white crest, which consists of a prominent keel with two acute teeth on either side. This species likes plenty of moisture at all times. It should be planted in a pot or basket, with a good cone of peat-fibre or fern-stem for the roots to penetrate. A native of New Granada and Central America; introduced in 1867.

Botanical Magazine, t. 5743.

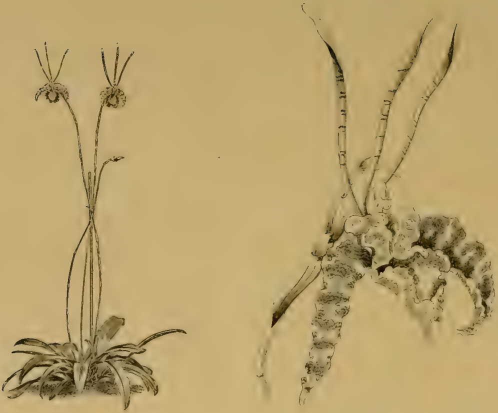
O. lamelligerum is similar to the above, but has even larger flowers, with a reniform dorsal sepal, coloured deep brown, with a yellow margin. The yellow petals have a few brown spots about the base.

O. Marshallianum.—This superb plant, when not in flower, bears a close resemblance to O. crispum—so close, indeed, that the latter is sometimes imported and sold for the former. The resemblance does not, however, extend to the flowers. Pseudo-bulbs oblong, from 2in. to 3in. long, compressed, furrowed when old, two-leaved. Leaves strap-shaped, 6in. to 8in. long, about 2in. broad, bright green, leathery. Flower-spikes stout, 1ft. to 2ft. long, branched; flowers numerous, 2½in. across; sepals ovate and concave, ½in. long, yellow, with purplish bands; petals 1in. long, fiddle-shaped, wavy, two-lobed, and coloured deep golden yellow, with large blotches of chocolate-brown along the middle; lip spreading, nearly 2in. across, irregularly notched, suddenly contracted towards the base, where there are two ear-like lobes; colour bright yellow, with spots of orange-red about the base; crest formed of fleshy tubercles. No Oncidium is more effective than this when it is well managed, the flowers lasting a long while, and being very bright in colour. It should be grown on teak blocks or in baskets, in a mixture of peat-fibre and sphagnum, and placed in the cool or Odontoglossum house, where it should have plenty of light and moisture. It blossoms in May. A native of Brazil; introduced in 1866.

Botanical Magazine, t. 5725.

O. Mantinii, a recently-introduced plant, is almost identical with O. Marshallianum, except in the colour of its flowers and the size of the petals, which are 1½in. long and 1in. broad; they are coloured deep chestnut, with a broad margin of bright yellow, whilst the lip is yellow, with spots of red scattered over it. Probably this plant is a variety of O. Marshallianum.

O. ornithorhynchum.—This is a dwarf, compact, free-flowering plant, of easy culture. It has smooth, ovate, compressed pseudo-bulbs, 2in. long, each bearing a pair of grass-like leaves 10in. long. The flower-scapes are thin and arched, about 1ft. long, branched, and many-flowered. The flowers are barely 1in. across; sepals and petals small, oblong, wavy; lip three-lobed or fiddle-shaped, the lateral lobes small and notched, the middle lobe much the largest, split at the apex, and bearing a conspicuous, warty, five-ridged crest; column short, with a long, curved rostellum.



ONCIDIUM PAPILIO, SHOWING HABIT AND DETACHED FLOWER

(Habit, much reduced; Flower, nat. size).

The colour of the whole flower is soft rose-purple, an unusual colour in the genus. The flowers are developed during the autumn and winter, and exhale a sweet, hay-like perfume for the whole month or so during which they last. This species may be grown as advised for O. Crœsus. It likes shade and moisture at all times. A native of Mexico and Guatemala; introduced in 1826. Syn. *O. roseum.*

Botanical Magazine, t. 3912.

Var. *albiflorum* has white flowers, with a yellow crest.

O. Papilio.—This is the Butterfly Orchid, which most people are acquainted with and admire. The flower is very remarkable in form, even for an Orchid, whilst in beauty it ranks among the best. The pseudo-bulbs are roundish, compressed, wrinkled, and so crowded as to overlap each other; they are one-leaved, each leaf being from 6in. to 8in. long, 2in. broad, leathery, deep olive-green, mottled with reddish brown. The flower-scape is basal, from 2ft. to 3ft. long, flexuose, jointed, flattened, winged, with a sheath at the top, from which the flowers spring, one at a time. The three sepals are all erect, 3in. long, narrow, and purplish-coloured; the two lateral petals are oblong, crisp-edged, curved downwards, about 2in. long, bright yellow, with bands and blotches of red; the lip is stalked, with a roundish blade, 1½in. across, very wavy and crisped at the edge, yellow, mottled or margined with bright cinnamon-brown; the column is short and winged. This plant is common in the West Indies and Venezuela, growing upon trees, and producing a very fine effect when in flower. Under cultivation here it is almost always in blossom, the same scape continuing to develop flowers for several years. It requires tropical treatment, with plenty of moisture and sunlight all the year round, and thrives best when fastened to a block of soft wood, although some growers are successful with it under basket-treatment. It should have a little sphagnum about its roots during the growing season. Should the plants get weak, it is a good plan to remove all the flower-spikes and encourage new growth. This species is interesting on account of its having been the first Orchid to find much favour among horticulturists. It was introduced from Trinidad in 1823.

Plate; Botanical Magazine, t. 2795.

There are several varieties, the best being the following:

Var. *Eckhardtii.*—Remarkable for its large flowers, having a lip coloured yellow, with an orange-red border.

Var. *Kramerianum.*—This is the finest of all. When healthy, it has leaves about 1ft. long by 4in. wide, beautifully mottled with cinnamon. The flowers are large; the sepals and petals are rich golden yellow, with reddish blotches; the lip is pale yellow, with a zone of reddish spots near the margin. It is a native of Central America. Syn. *O. Kramerianum.*

O. prætextum.—A free-flowering, ornamental plant, which in pseudo-bulbs, leaves, and general habit, is almost identical with O. crispum. Flower-spike long, arching, branched, and many-flowered; flowers each 2in. across; sepals obovate, stalked, ¾in. long, yellow, with bands of brown; petals stalked, obovate, wavy, twice as large as the sepals, brown, with a tinge of yellow on the margins; lip 1½in. broad, kidney-shaped, narrow at the base, having short side lobes and a warted crest with three blunt teeth, yellow, with a broad marginal band of brown. It requires the same treatment as O. crispum, and blossoms in July, the flowers lasting for about a month. A native of Brazil; introduced in 1876.

Botanical Magazine, t. 6662.

O. sarcodes.—A handsome-flowered, easily-grown plant, very similar in habit to O. curtum. The pseudo-bulbs are finger-like, 3in. to 5in. long, dark green, each bearing a pair of leathery, shining green leaves, 6in. to 9in. by 2in. The flower-spike is from 2ft. to 5ft. long, branched, and many-flowered; the flowers are variable in size, the finest being 2in. across; sepals obovate; petals ¾in. broad; lip broad and wavy; colour bright yellow, with blotches of brown-red, the blotches thickest on the petals, whilst on the lip there are only a few near the base. This plant should be in every collection, as it is easily managed and very floriferous when in health. It may be grown in baskets or pots, or on blocks, in an intermediate temperature.

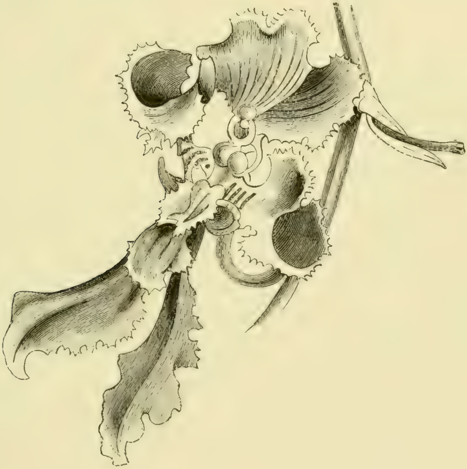


Fig. 94. Flower of Oncidium serratum
(nat. size).

The flowers are produced in spring. Introduced from Brazil in 1849. Syn. *O. Rigbyanum.*

Warner's Select Orchids, i., t. 23.

O. serratum.—A very handsome, large-flowered species, remarkable for its long, twining flower-spike. Pseudobulbs flask-shaped, from 4in. to 6in. long, partly inclosed in sheathing leaves till old. Leaves broad, leathery, 1ft. or more in length, 2in. broad, arched, bright green. Flower-scape from 6ft. to 12ft. long, branched, twining, many-flowered; flowers 3in. across; upper sepal reniform, 1½in. broad, wavy and crisped; lower sepals 2in. long by ½in. wide, curved, crisped and wavy; petals oblong, over 1in. long, wavy, curled in till they almost meet over the column; lip small, fleshy, hastate, with a crest of five prominent ridges. The colour of the whole flower is bright cinnamon-brown, with the upper half of the petals and the edges of the sepals yellow. This species blossoms in winter. It should be planted in a roomy, well-drained pot, in a mixture of turfy peat and sphagnum, and be grown in the cool house. A native of Peru; introduced in 1850.

Fig. 94; Botanical Magazine, t. 5632.

The following species are very similar to the above in habit and form of flowers, viz.:

O. cryptocopis.—Flowers reddish brown, margined with yellow; lip small, reniform, recurved.

O. falcipetalum.—Flowers very large, brown; scape 20ft. long.

O. hastiferum.—Flowers reddish brown; upper sepal ovate.

O. ludens.—Sepals brown and yellow; petals yellow, marbled with cinnamon; lip ochre-yellow with a mauve crest.

O. trifurcatum. — Flowers brown, with yellow-edged petals; lateral sepals larger than the upper one.

O. xanthodon.—Flowers nearly 2in. across; sepals and petals stalked, ovate, wavy, brown, with yellow margins; lip recurved, yellowish, with a prominent, warty crest.

O. splendidum.—This is one of the finest of the cultivated Oncidiums. Its flowers resemble those of another beautiful species, viz., O. tigrinum—indeed, Sir Joseph Hooker called it a variety of that plant. Until 1888, O. splendidum was scarcely known in gardens, but it has since been introduced in great quantities, and is now plentiful and cheap. It has roundish, compressed pseudo-bulbs, about 2in. in diameter, one-leaved. Leaf leathery, thick, oblong-ovate, 6in. to 12in. long, 2½in. broad, dull green. Flower-spike erect, branched, 2ft. or more in length, and many-flowered; flowers 3in. across; sepals and petals equal, lanceolate, 1in. long, recurved, yellow-green, with broad bands of brown; lip large, narrow at the base, where there are two small lateral lobes, the blade being 2in. broad and 1½in. long, colour a rich, uniform yellow, with a white, two-ridged disk. This plant requires tropical treatment; it may be grown on a block or in baskets, in a mixture of peat and sphagnum, and likes plenty of water and sunlight. It blossoms in spring. A native of Guatemala and Mexico; introduced in 1870.

Botanical Magazine, t. 5878 (as *O. tigrinum*, var. *splendidum*).

O. superbiens.—This species is similar to O. serratum. Pseudo-bulbs 4in. long, ovate, compressed, wrinkled when old. Leaves 1ft. long, 1½in. broad, leathery, acute-pointed, and keeled. Flower-spike twining, 2ft. to 5ft. long, branched, many-flowered; flowers 2½in. across; sepals stalked, broad, crisped and wavy, reddish brown, margined with yellow;

petals also stalked, shorter than the sepals, recurved, very wavy, bright yellow, with bands of reddish brown on the lower half; lip small, purple, lanceolate, recurved, the crest consisting of one large, blunt, lobed, yellow tooth. This is an attractive plant when in flower, but, like all the plants belonging to the group with large sepals and petals and a very small lip, it is not easy to flower, although it grows freely and keeps in robust health in a cool house under ordinary treatment. Like its allies, it requires a liberal allowance of root-room and plenty of water at all times. A native of New Granada and Venezuela; introduced in 1872.

Botanical Magazine, t. 5980.

O. tigrinum.—A most beautiful, free-flowering, and very fragrant species, which thrives under ordinary treatment. It has large, broadly ovate, compressed pseudo-bulbs, 3in. long, and two-leaved. Leaves stout, leathery, bright green, about 1ft. long by 2in. broad. Flower-spike stout, erect, 3ft. long, branched, many-flowered, each flower on a pedicel 1½in. long, and measuring 2½in. across; sepals and petals equal, 1in. long, wavy, recurved, acute-pointed, rich reddish brown, with a few bars and blotches of dull yellow; lip narrow and eared at the base, then expanded into a broad reniform or almost orbicular blade nearly 2in. across, its colour being bright sulphur-yellow. The odour of the flowers is violet-like and very powerful. No plant could be more useful than this, its blossoms usually developing in late autumn and winter, lasting several weeks, and filling the house with a delightful fragrance. It thrives in a warm greenhouse, requiring, in other respects, the same treatment as the Odontoglossums. A native of Mexico; introduced in 1840. Syn. *O. Barkeri.*

Botanical Register, t. 1651.

O. varicosum.—This is one of the most elegant and attractive-flowered Orchids. It has ovate, angled, furrowed pseudo-bulbs 2in. to 4in. high, each bearing two strap-shaped, firm, dark green leaves about 9in. long. Flower-spikes strong, arching, many-branched, sometimes 3ft. long and heavily laden with flowers, which are about 1in. across; sepals and petals small, green, with brownish blotches; lip large, spreading, bright yellow, with two

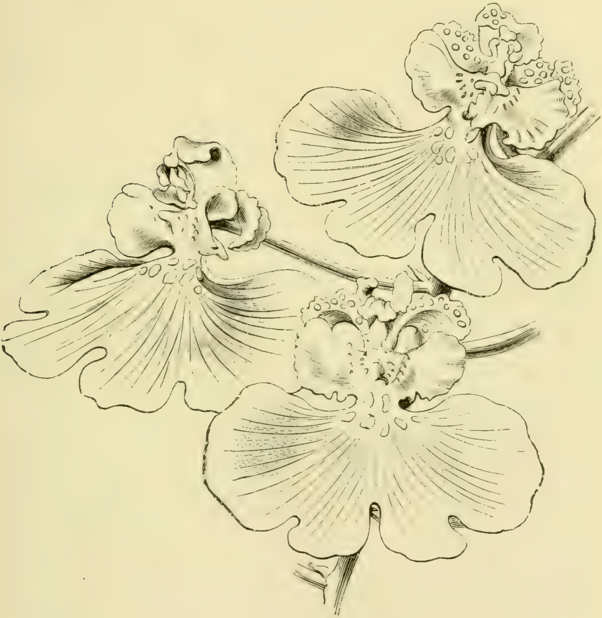


Fig. 95. Flowers of Oncidium varicosum var. Rogersii (nat. size).

ovate lateral lobes, then a narrow and short waist, the large middle lobe being kidney-shaped and notched; crest fleshy and curiously toothed. Cultivated on blocks or rafts, or in baskets, in a mixture of peat-fibre and sphagnum, and kept in the moist end of the Cattleya or intermediate house whilst growing, this and the following will produce fine spikes of flower during winter and spring. Whilst in bloom they may be placed in the cool house. A native of Brazil; introduced about 1850.

Williams' Orchid Album, iv., t. 192.

By far the best of the several varieties is that known as *Rogersii*, of which spikes bearing over 150 flowers have been grown in England. The lip in this variety is fully 2in. across, and is of a rich golden-yellow colour, with a few bars of red at the base.

Fig. 95; Floral Magazine, t. 477.

O. zebrinum.—A very beautiful, large-flowered species, belonging to the small-lipped section. In habit, pseudobulb, and foliage, the plant is identical with O. macranthum. Flower-spike twining, 6ft. to 12ft. long, branched, and many-flowered; flowers over 2in. across; sepals and petals almost similar, 1¼in. long, narrowed to a stalk at the base, ½in. broad in the middle, the point acute, and the margins very wavy, colour white, with bands of reddish purple across the lower half; lip small, bent almost at right angles, fleshy, the crest thick, toothed, and warty, colour yellow, with spots of red. A native of Venezuela; introduced about 1871. It requires the same treatment as O. varicosum, and flowers in August, remaining in beauty for about a month.

Botanical Magazine, t. 6138.

CHAPTER XLVI.

PAPHINIA.

THIS is a small genus, included, in the latest classification, under Lycaste, but sufficiently distinct for garden purposes to justify us in retaining the older and better-known name. All the introduced species are small in growth, with very pretty and strikingly-coloured flowers, which, in proportion to the size of the plants, are surprisingly large. The pseudo-bulbs are short, clustered, and slightly furrowed, bearing two or three plaited, lanceolate leaves. The pendent scapes originate at the base of the pseudo-bulbs, and carry from one to three flowers, in which the sepals and petals are about equal in size, fleshy, widely expanded, and lance-shaped; they are also more or less barred and spotted with brown or purple on a whitish ground. The lip is unguiculate, three-parted, with a fringe of white, hair-like glands on the tip. There are two pairs of pollen-masses attached to a rather long caudicle. The species are natives of Trinidad and various parts of tropical South America, and all of them are worthy of cultivation.

Culture.—Paphinias require stove treatment all the year round, shade during summer, and to be suspended near the glass. They should be planted in pans or small baskets, in a compost of fibrous peat and sphagnum, to which may be added a few pieces of charcoal. An abundant supply of water is needed during active growth; and although much less is required during rest, it is not advisable to allow the plants to remain dry at any time.

P. cristata.—This is a singular and exceedingly pretty species, with small, oblong pseudo-bulbs 1½in. high, and lance-shaped, plaited leaves from 4in. to 6in long. The flower-scapes are sheathed in loose brown scales, and bear one or two, sometimes three, flowers from 3in. to 4in. in diameter. The sepals and smaller petals are spreading and lance-shaped, the white ground being nearly covered with streaks and blotches of rich chocolate-brown. The singularly-formed lip is three-lobed, the side lobes being scimitar-shaped, and the much larger middle lobe triangular, with an upright tuft of club-shaped processes near the apex; these are white, the rest of the lip being of a rich chocolate-brown. The column is club-shaped, yellowish green, with transverse reddish-brown markings towards the base. This species flowers from June to September, and lasts about a fortnight in beauty. It was introduced from Trinidad in 1834, and is also found wild in Demerara and New Granada. Syn. *Lycaste cristata.*

Botanical Magazine, t. 4836.

P. grandis.—This large-flowered and very handsome species is the finest of the genus. The pseudo-bulbs are four-angled, somewhat compressed, with lance-shaped, plaited leaves. The flowers are 7in. in diameter, although they do not open to their full extent. The sepals and petals are broadly lance-shaped, the lower portion of each being of a creamy white, spotted and barred with chocolate-purple and the upper half entirely chocolate-purple. The lip is blackish purple at the contracted base, having a cream-coloured disc and two narrow side lobes of chocolate-brown; the purple middle lobe has two sickleshaped divisions spreading outwards, and is terminated by a cluster of cream-coloured hairs. The green column is 1in. long, and is spotted with purple. This species flowers in October and November. It is a native of Brazil. Syn. *Lycaste grandis.*

Williams' Orchid Album, iv., t. 145.

P. rugosa.—This interesting little species is similar in habit to P. cristata, but is smaller, having short, furrowed pseudo-bulbs, and pointed, plaited leaves. The flowers occur singly or in pairs on the pendent scapes, and measure 3in. in diameter. The narrow, pointed sepals and petals are creamy white, spotted with dull purple, and the lip is reddish purple, with the terminal tuft of hairs white. It is not a common species, and although well worth growing, it is not so ornamental as either of the two preceding. A native of New Granada. Syns. *P. Sanderiana*, *Lycaste rugosa.*

CHAPTER XLVII.

PERISTERIA.

A SMALL genus of tropical South American Orchids, of which four species have been discovered. They are large and handsome in appearance, and are characterised by large, fleshy pseudo-bulbs, surmounted by several long, plicate, pointed leaves. The flowers are produced on erect or drooping scapes, which spring from the base of the pseudo-bulbs. They are of fleshy texture, fragrant, and nearly spherical. The sepals are concave, and united at the base, and the petals resemble them, except that they are a little smaller. The lip is continuous with the column, and is sagittate at the base, the upper half bent over the face of the column, which is short and fleshy. P. elata is the finest species, on account of its beauty and its remarkable structure, which gives rise both to the generic name and to that by which the species are commonly known, viz., "Dove Orchids."

Culture.—The successful culture of Peristerias depends principally on their having very liberal treatment whilst growing, and a well-defined period of rest afterwards. When signs of growth appear, the plants should be potted in a well-drained compost of fibrous loam, crock-dust, and leaf-mould, and placed in a moist, tropical house. Water carefully at first, increasing the supply as the new growths gain strength. When the pots are full of roots, an occasional dose of weak liquid manure is to be recommended. During rest they may be removed to the cooler part of the Cattleya-house, very little water being then needed. P. elata is very successfully grown by some cultivators, who treat it as a purely terrestrial Orchid, potting it in a mixture of loam and leaf-mould, with a sprinkling of crushed bones and silver-sand added. The pots are plunged in a tan bed in a moist, sunny stove during the growing season. When growth is complete, the plants are removed to a shelf in an intermediate house, and given less water; they should not, however, be allowed to get dry. Bulbs as large as swans' eggs, and flower-spikes 5ft. high, have been produced by this treatment. Peristerias are easy to keep alive, but unless they get very liberal treatment they will not flower.

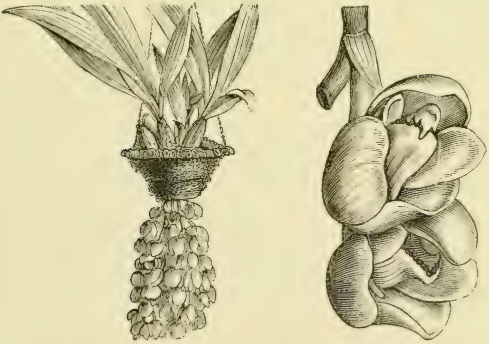


Fig. 96. Peristeria cerina, showing Habit and detached Flowers
(Habit, much reduced; Flowers, nat. size).

P. cerina.—A handsome species, having large flowers in pendent spikes, and with a strong smell like that of bruised juniper-leaves. The pseudo-bulbs are egg-shaped, furrowed, dark green, and 3in. long. Leaves 1ft. or more long, lanceolate, stout, plaited, and dark green. Flower-spike short, stout, always pendulous, as shown in the illustration, and bearing from six to a dozen flowers, which are fleshy, somewhat cupped, and coloured yellow sometimes with the addition of a sprinkling of small, purple dots. A variety called *guttulata* is thickly dotted with violet. A plant such as is represented in the accompanying illustration is both singular in appearance and ornamental. During summer this species should be grown in the Cattleya-house, and be well watered; in winter it should be rested. It blossoms in June. A native of Mexico, whence it was introduced in 1835.

Fig. 96.

P. elata.—This species is of a stately habit, and when well grown is in every way a very ornamental plant. The onion-like pseudo-bulbs are slightly wrinkled, and broadly ovate in outline; they are usually from 4in. to 5in. high, and bear at the top three to five strong-nerved leaves, averaging between 2ft. and 3ft. in length, by 6in. in width, tapering towards both ends. The flower-stems are erect, 3ft. to 4ft. high, the upper third bearing the flowers, which are sweetly scented, wax-like, somewhat cupped, and measure 2in. across. The sepals are concave, and, like the smaller and more delicate petals, are shining white. The most remarkable feature of the flower is the column, which is united to the base of the thick and fleshy lip, and is furnished with two white, spreading, fleshy wings, and a bird's-head-like top, supposed to bear a resemblance to a dove. The lip and wings are sometimes spotted with purple. This species flowers from June to September, the racemes continuing to develop flowers for six or seven weeks after opening. It was introduced in 1826 from Panama, where, because of the resemblance alluded to, it is called by the Spaniards "El Spirito Santo."

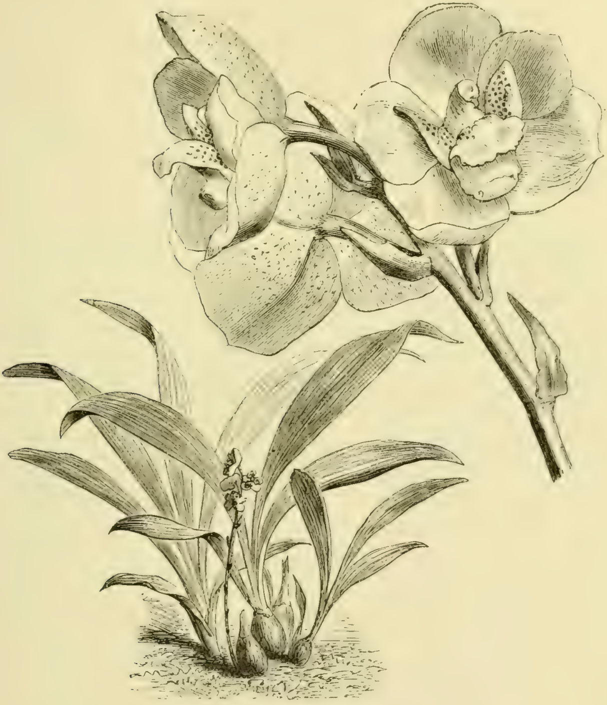


Fig. 97. Peristeria elata, showing Habit and detached Flowers
(Habit, much reduced; Flowers, nat. size).

Fig. 97; Botanical Magazine, t. 3116.

P. pendula.—A distinct and handsome species, with oblong, furrowed pseudo-bulbs, and lance-shaped, striated leaves. The flower-scape is pendulous, from 1ft. to 1½ft. long, and is produced from the base of the pseudo-bulb. As many as twenty flowers have been produced on a single raceme. They are fragrant, and nearly globular, measuring 1in. to 1½in. across. The sepals are concave, and united at the base, and, together with the smaller petals, are of a pale yellow, tinged with rose, and thickly dotted with purple on the inner side. The thick, fleshy lip is yellowish white, with small, purple spots, and has an elevated protuberance on the centre. The column is furnished with two wings passing downwards into the lip. P. pendula rarely flowers in cultivation: the finest example of it ever seen in England was grown in the collection of Baron Schrœder. The species requires tropical treatment, and should be planted in a teak basket. A native of Demerara; introduced in 1855.

Botanical Magazine, t. 3479.

CHAPTER XLVIII.

PESCATOREA.

ALONG with several other reputed genera, these epiphytal plants are now included under Zygopetalum in the "Genera Plantarum"—the latest authority on generic limitation. For garden purposes, however, they are quite distinct, and are readily recognised, both by their habit and by their inflorescence. They have no pseudo-bulbs proper, and the evergreen, usually strap-shaped, reed-like leaves, are produced in distichous tufts from the crown of a short stem. The flowers are borne singly on scapes 3in. to 6in. long, and, as a rule, are large and showy, as well as sweetly scented. The sepals are concave, larger than the petals, and the lip is contracted at the base into a claw, but with the front portion large and spreading. A striking feature of the flower is the ruff-like crest near the base of the lip; it consists of numerous plaits or ridges, and is usually of a different colour to the rest of the lip. The species are all natives of the Andes of South America, and are mostly found at considerable altitudes.

Culture.—The successful cultivation of Pescatoreas is, unfortunately, not so easy as could be desired. They are described by persons who have seen them in a wild state as inhabiting the moist recesses of the virgin forest, where they are rarely exposed to the sun's rays. Under artificial conditions they are found to thrive best in the coolest part of the East Indian house, or in the intermediate house, in a position shaded from bright sunshine. The absence of pseudo-bulbs indicates the necessity of keeping them moist during both winter and summer; indeed, beyond a slight reduction in the amount of water required in winter, no attempt at resting them should be made. They thrive best when fastened on large blocks or rafts of teak, with lumps of peat-fibre, sphagnum, and pieces of charcoal about the roots; grown in this manner, the compost can be easily renewed without disturbing the roots, and can also be added to as the plants extend. They may also be grown in pots in the same compost, care being taken to give abundant drainage. Some cultivators grow these plants on flat dishes, with a cone of peat, moss, and charcoal, placed loosely about the roots; they are suspended near the roof in a moist, warm house, and shaded from bright sunshine.

P. Backhousiana.—An attractive species, with linear, dark green, opposite leaves, between which the scapes are produced. The tapering sepals and petals have a creamy-white ground-colour, the tips being marked with purplish violet. The lip is three-lobed and cream-coloured, the callus consisting of numerous yellow ridges, with intervening lines of a brownish colour. The flowers measure 3in. across, and are developed from June to August. The species is a native of Ecuador, and was introduced in 1877. Syn. *Zygopetalum Backhousianum.*

P. cerina.—A charming species, with tufted, oblong, pointed leaves, from 10in. to 12in. long, and basal flower-stems, each of which is about 6in. long, and bears a flower about 3in. in diameter. The rounded, oblong sepals are concave, fleshy, and straw-coloured, the upper one, as well as the similarly-shaped but smaller petals, being paler. The lip is yellow, with a thick, semicircular crest on the centre, and a contracted base. The column is short and club-shaped, sometimes deep purple near the base. This species flowers at different periods, and remains long in beauty. It was introduced, in 1851, from Chiriqui, where it grows at an altitude of 8000ft. Syns. *Huntleya cerina*, *Zygopetalum cerinum*.

Botanical Magazine, t. 5598.

P. Dayana.—This distinct and beautiful species has narrow, keeled leaves, 8in. to 10in. in length, and flowers about 3in. across. The sepals are broadly ovate, and milky white, tipped with green; the smaller, rounded petals are entirely white. The lip is white, with the ring-shaped callosity on the centre of a beautiful purplish violet, the rays in front being similarly coloured. The column is mainly yellow, but has a broad, reddish patch at the base. This species flowers in the late autumn months; in a wild state it produces as many as twenty-five flowers fully open at one time. It is very variable in colour, and we append some of the varieties of which Prof. Reichenbach has published descriptions, all being of great beauty. The plant was introduced from New Granada in 1873. Syn. *Zygopetalum Dayanum*.

Var. *candidula* has the sepals and petals pure white, the lip being tinted with purplish crimson. A very lovely variety.

Var. *rhodacra* has white sepals and petals tipped with purplish rose, and the lip white, suffused with crimson. The short, broad column is white, crimson at the tip.

Botanical Magazine, t. 6214.

Var. *splendens* has the tips of the sepals and petals of a dark violet colour, the lip being also deep violet.

P. Klabochorum.—This is one of the most beautiful of its kind. It has the typical strap-shaped, tufted, dark green leaves of the genus, and they are 1ft. or more in length. Like several other species, it varies considerably in the colouring of its flowers, the form described being that most commonly met with. All the varieties, however, are very ornamental. The flowers measure 3in. to 3½in. across, with the oblong, bluntish sepals and more pointed petals white, the points being of a chocolate-purple. The three-lobed, trowel-shaped lip is usually yellowish (sometimes white), the front portion being almost entirely covered with rows of purple-tipped hairs; the callus at the base is sulphur-coloured, with brown keels. The column is dull yellow, tinged with brown and purple. Introduced in 1879 from Ecuador. Syn. *Zygopetalum Klabochorum.*

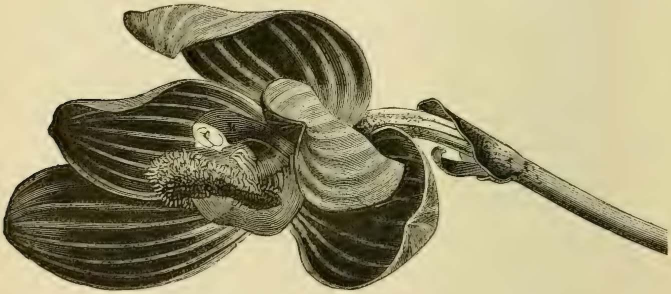


Fig. 98. Flower of Pescatorea Lehmanni
(nat. size).

Williams' Orchid Album i., t. 17.

Var. *ornatissimum* has the tips of the petals a deep mauve-purple, and spots of the same colour at the base. The upper sepal has also a spot at the base.

P. Lehmanni.—An exceedingly handsome species, with leaves from 1ft. to 1½ft. long, and 1in. broad. The flowers are 3in. to 3½in. in diameter. The sepals and petals are broadly ovate, and white, traversed by close, parallel lines of a reddish-purple colour. The small lip is of a deep mauve-purple, three-lobed, and very much narrowed at the base, the side lobes folded towards the column; the middle lobe is clothed in a remarkable manner with coarse, purplish hairs, and the callus, which consists of about a dozen longitudinal ridges, is of a chestnut-brown. Considerable variation in colour appears in different plants; in some, the lines on the sepals and petals more nearly approach violet, the lip also being violet. This species is a native of Ecuador.

Fig. 98 (for which we are indebted to the Editor of the "Gardeners' Chronicle").

P. Wallisii.—A very fine species, with the usual one-flowered scapes emerging from the base of the pointed, strap-shaped leaves. The flower is 3in. in diameter, and prettily coloured. The sepals are oblong, terminating abruptly in a point, and, like the rhomboidal petals, are of a rich creamy white, with the tips deep violet. The oblong lip is furrowed, and is of a dark violet shade, the margin being white. The callus and the column are also white, except the base of the latter, which is violet. A native of Ecuador, introduced in 1869, and requiring rather cooler treatment than the other species. Syn. *Zygopetalum Wallisii.*

CHAPTER XLIX.

PHAIUS.

A USEFUL genus of terrestrial plants, most of which are easily grown, free-flowering, and usually of stately and ornamental habit. They have long, lance-shaped, plaited leaves, and erect flower-scapes bearing generally large and showy flowers. The sepals and petals are large and spreading; the lip is erect, and stands out from the rest of the flower, the base forming a kind of chin or spur, and the sides folding over and inclosing the long and slender column; the front portion is usually expanded, and has a wavy margin. Thunias are sometimes included under this genus, but, being quite distinct in habit and inflorescence, we prefer to keep them separate. Phaius has a wider distribution than most genera of Orchids, occurring abundantly throughout tropical Asia, and also in tropical Africa, Madagascar, and Australia.

Culture.—The following species, with the exception of the rare P. tuberculosus, are easy to grow and flower. They flourish in a compost of fibrous loam, leaf-soil or chopped sphagnum, and silver-sand, to which may be added, for the potting of well-rooted specimens, a small proportion of dried cow-dung. During the active season they like a warm, moist atmosphere, and liberal waterings at the root. Occasional applications of manure-water add colour and vigour to the growth. In summer, the warmest part of the intermediate house is suitable; but in order to ripen the growth, and cause the plants to flower, they should be subjected to cooler treatment after the leaves have reached their full size. They will then require very little water. P. grandifolius and P. Wallichii often produce a large number of young growths in spring, and unless required for propagation, these should be thinned out in proportion to the size of the pot. By this means, stouter flower-scapes and larger and more numerous flowers are obtained.

P. bicolor.—An easily-grown, useful, and ornamental species, closely resembling P. grandifolius in habit, the leaves only being somewhat narrower, and of firmer texture. The flowers measure over 4in. across, and are produced on strong, erect spikes, sometimes 5ft. in height. The pointed sepals and petals are 2in. or more long, and of a bright reddish brown; the side lobes of the lip are rose-coloured, and folded over the column, the broad front lobe being yellowish white, flushed with rose. The flowers, which are developed in summer, expand in slow succession, so that a strong spike lasts three or four months. On this account alone P. bicolor deserves to become a popular garden plant. It was introduced from Ceylon in 1837, and may be grown very successfully in an intermediate temperature.

Botanical Magazine, t. 4078.

P. Blumei.—A desirable species with lance-shaped, plaited leaves, 2ft. in length, and short, roundish pseudo-bulbs, produced from a creeping rhizome. The flowers are individually about 4in. in diameter, and are borne on the upper half of flower-scapes which originate at the base of the pseudo-bulbs, and attain a height of 3ft. to 4ft. The sepals and petals are lance-shaped, pointed, and of an olive-brown colour. The sides of the lip are yellowish, and fold over the column, the large, expanded front lobe narrowing to a point at the apex, and being of a pretty crimson, edged with yellow. The species flowers in March and April, and is a native of Java.

Var. *Bernaysii* has the sepals and petals white on the outside, yellow within; the side lobes of the lip are sulphur-yellow, and the middle lobe is white, with a yellow centre. Introduced from Queensland in 1873.

Botanical Magazine, t. 6032 (as *P. Bernaysii*).

P. grandifolius.—An old garden favourite, and still one of the most frequently cultivated. Its ornamental appearance, together with its easy culture, renders it a most valuable Orchid. It has large, roundish pseudo-bulbs, and large, dark green, plaited leaves, from the base of which the spikes of flowers are produced. These are 3ft. to 4ft. high, and bear numerous showy flowers, about 4in. in diameter. The oblong, pointed sepals and petals are white on the outside, and of a reddish brown within. The projecting lip is tubular, 1½in. long, spreading at the apex, white, the throat and disc yellow, and the sides flushed with crimson. This species is a native of China and Australia, and was introduced to cultivation in 1778. It is now cultivated in most tropical countries, and in some parts has become naturalised. It flowers at various times between December and June, most frequently in March and April.

Fig. 99; Botanical Magazine, t. 1924.

P. maculatus.—One of the few Orchids which have variegated foliage, its flowers also being very beautiful. The pseudo-bulbs are 2in. high, furrowed, and ovate. The plaited leaves are 1½ft. to 2ft. long, by about 4in. wide, tapering at each end; they are dark green, freely marked with large, roundish, yellow spots. The flower-stems are 1½ft. to 2ft. high, and towards the top bear ten to fifteen flowers, rather closely arranged. The flowers are 2in. to 3in. across, with the oblong sepals and petals of a clear, soft yellow, and the cylindrical lip also yellow, but streaked with reddish brown on the edges of the middle lobe. The species is a native of Northern India and Japan, and succeeds well in an intermediate house. It was introduced in 1823. Syns. *Bletia flava, B. Woodfordii.*

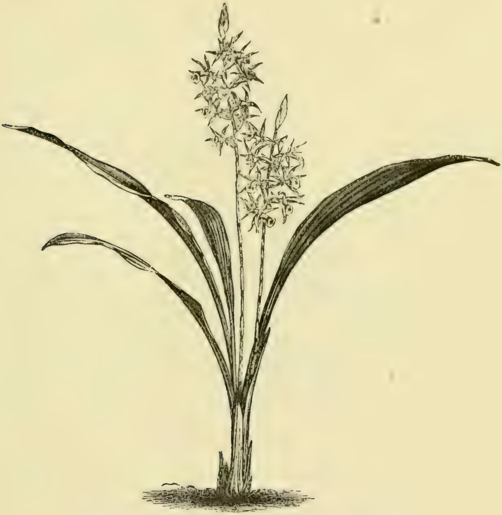


Fig. 99. Phaius grandifolius
(much reduced).

Botanical Magazine, tt. 2719 and 3960.

A variety is in cultivation with flowers exactly resembling those of the type, but with unspotted leaves.

P. tuberculosus.—This species is very distinct from its allies, and is one of the most beautiful Orchids introduced in recent years. Its small, slender pseudo-bulbs spring from a rhizome-like stem, which emits roots freely. The leaves are from 6in. to 9in. long. The flowers are borne on erect spikes, and are each 2½in. in diameter, with pure white sepals and petals, the latter overlapping the slightly narrower sepals. The beautiful lip is three-lobed; the lateral lobes are yellow, almost covered with dull brownish-crimson spots, and arched over the slender, curved column; the central lobe is smaller and roundish, divided at the apex, wavy, and white, spotted with

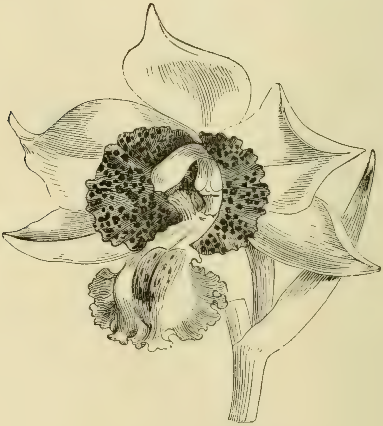


Fig. 100. Flower of Phaius tuberculosus
(nat. size).

rosy purple. A native of Madagascar, whence it was introduced in 1881. As before intimated, this species is a difficult plant to grow successfully. It requires a higher temperature than the other species, and should have a shady, moist position in the tropical house. It seems to thrive best in a compost of peat-fibre, sphagnum, and small crocks, with abundance of water at the roots all the year round. It also thrives when fastened to an upright raft, with a tuft of living sphagnum about its rhizomes. It is apt to fall a prey to thrips, if not carefully watched. A large consignment of it has recently been brought to England by Messrs. Sander and Co. Syn. *Bletia tuberculosa.*

Fig. 100 (for which we are indebted to the Editor of the "Gardeners' Chronicle").

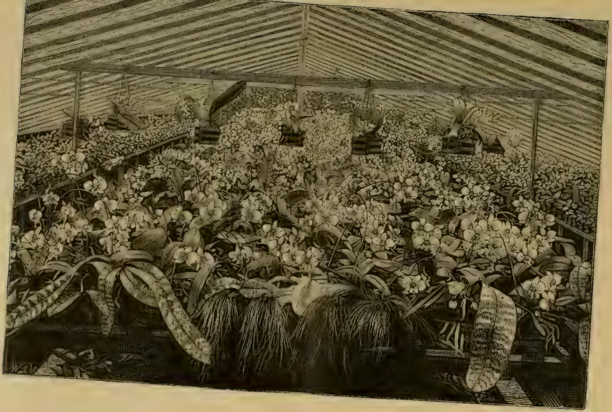
P. Wallichii.—A fine species, similar to P. grandifolius in habit. Its leaves are from 3ft. to 4ft. long, with prominent, longitudinal nerves, and its flower-stems are erect, and from 3ft. to 5ft. in height. The flowers are 4in. across, with lance-shaped sepals and petals, white on the outside, and of an orange-yellow, flushed with reddish purple, on the inner side. The lip is yellow, except in the throat, where it is of a brownish purple; it is pointed at the apex, and has a crisped margin. A native of the Khasya Hills, whence it was introduced in 1837. It is well suited for room decoration, its stately habit being very effective, and its flowers lasting about six weeks. It blossoms from February to May.

Var. *Manni* has larger flowers, much deeper in colour, and is one of the handsomest of the genus. It is figured in the Botanical Magazine, t. 7023, as *P. Wallichii.*

CHAPTER L.

PHALÆNOPSIS.

For magnificence of flowers no genus of tropical Orchids surpasses this; indeed, it may be said to comprise some of the most beautiful of the whole family. The species are mostly natives of the hottest and moistest parts of the Old World, their natural range extending from Assam and Burmah, through the Islands of the Indian Archipelago, to the Moluccas and Philippines. Although the first Phalænopsis was discovered in the Island of Amboyna as early as 1750, and figured about the same date, it was not until 1836 that a living plant was introduced to this country. This flowered in 1838, and proved to be P. amabilis. It was afterwards sold by Messrs. Rollison for 100 guineas. Upwards of fifty named forms of Phalænopsis are now in cultivation, all of which are epiphytes and, with the exception of some forms of P. Lowii, evergreen. The leaves usually number from four to eight, and are closely arranged in two opposite rows. None of the kinds have pseudo-bulbs, but the leaves are generally thick and leathery; in several species the upper surface is prettily mottled with silvery grey, and the under side coloured deep purple. The genus is distinguished by the grace with which the flowers are displayed; they usually face in one direction, and are elegantly supported on slender, frequently branching racemes.



HOUSE OF PHALÆNOPSIS IN BLOOM IN MESSRS. HUGH LOW AND CO.'S NURSERIES AT CLAPTON.

Another charm of Phalænopses is their remarkably free-flowering nature; P. Schilleriana has been known to bear over 170 flowers on a raceme, and as each flower is 2in. to 3in. across, very full and spreading, its splendid appearance may be easily conceived. In regard to the individual flower, the genus may be roughly divided into two sections: the one in which the sepals and petals are about the same size, and the lip is undivided at the apex—represented by P. Luddemanniana and P. violacea—and the other in which the petals are much larger and broader than the sepals, and where the apex of the lip separates into two divergent horns, which in some species assume quite a thread-like form. To the latter section the showiest species belong. A valuable property is the length of time the flowers remain in beauty; indeed, in cases where the plants are not in the most vigorous state, it is advisable to remove the flowers before they naturally fade.

Culture.—Growing, as has already been stated, in some of the most tropical regions of the globe, on the trunks of trees and on the sides of rocks, Phalænopses luxuriate only under conditions of great heat and moisture, and especially is this the case during the period of active growth. During winter the plants should be kept in a temperature of from 65deg. to 70deg., which after February, when signs of growth will re-appear, ought to be gradually raised until at midsummer it reaches 70deg. to 75deg. by night, with a natural rise of 10deg. by sun-heat in the daytime. In bright sunshine they require to be shaded, a thin tiffany blind being the best for this purpose. The most essential factor in the culture of these plants is probably the moistness of the atmosphere in which they grow. In the active season it should be kept as near saturation point as possible, and whilst in the shorter days it should be regulated in proportion to the temperature, anything approaching dryness is harmful at any time. The same applies to watering at the root: copious supplies are needed when the plants are growing, and although great care is necessary when they are inactive, the moss in which they are planted must never be allowed to get quite dry. Watering overhead should be especially avoided in winter and on dull days. To guard against spot, a constant supply of fresh air is needed, but to prevent chills it should either be admitted at a distance from the plants, or be made to pass over hot-water pipes where evaporating pans are placed. Pots and baskets, cylinders and rafts, are used to grow Phalænopses in. If the plants are to be suspended—a position in which the flowers are most effective—baskets or large rafts of teak are best; whilst if a stage is selected, long cylinders are much to be preferred. From the success we have seen attained by the latter method, we should recommend its adoption. In whatever position they are grown, a free and ample drainage is of the utmost importance. The material in which they are planted should consist of a thin layer of clean, live sphagnum placed upon a good layer of potsherds and lumps of charcoal.

Although in some instances, where particular requirements appear to be exactly met, Phalænopses grow as freely as Cypripediums do, such is not by any means always the case. It often happens that, through differences in moisture, ventilation, &c., they succeed in the same house much more satisfactorily in one part than they do in another. P. amabilis and P. Stuartiana are the best species for an amateur to commence with: they are probably the easiest to grow, and are fully as beautiful as any others. In spring, about April or May, the plants should be examined at the root, and all dead and decaying matter brushed or washed away. This may be done without disturbing the living roots, which cling to the teak and cannot be removed without risk. We have often taken away all the drainage and sphagnum, washed the roots and insides of the baskets or cylinders, and replaced the drainage and moss, without loosening a single live root. Should the plants require a shift into larger baskets or cylinders, it is almost always safest to place the old one inside the larger one and fill up with drainage. The finest examples of Phalænopsis ever grown were in the collection formed by the late Mr. Partington, of Slough. These plants had from six to eleven leaves each, and some of the leaves were 16in. long. Success in this case is supposed to be due to periodically dressing the gravel of the stages and path with salt. This may do good —it cannot do harm—and there does not appear to be any difference between the treatment here recommended and that practised by Mr. Partington's gardener, except only in the use of salt. Messrs. Hugh Low and Co., of the Clapton Nurseries, have long been famous for their success in importing and cultivating Phalænopses. The more popular species are represented in their nurseries by the thousand, and when in blossom they form a picture of the greatest beauty. The accompanying Plate, for which we are indebted to the Editor of the "Gardeners' Chronicle," represents a Phalænopsis-house at Clapton.

P. amabilis.—A beautiful, free-flowering species, the flowers, if kept dry, remaining fresh for several weeks. It has thick, elliptical, lance-shaped, brownish-green leaves, divided obliquely by a prominent midrib. The flowers are borne in two opposite rows, on long, pendent, often branching racemes; they are 3in. in diameter, and are entirely white except the lip, which, on the inner side, is spotted and streaked with rosy pink and yellow. In shape the sepals are broadly ovate, the petals being still broader and somewhat rhomboidal; the lip is three-lobed, the side lobes standing erect at each side of the column, and the central one dividing at the apex into two slender, twisted filaments. It is found in Java and the Philippine Islands, and was first introduced in 1836. It flowers at various seasons, but most freely during the summer months. Syn. *P. Aphrodite.*

Fig. 101; Botanical Magazine, t. 4297.

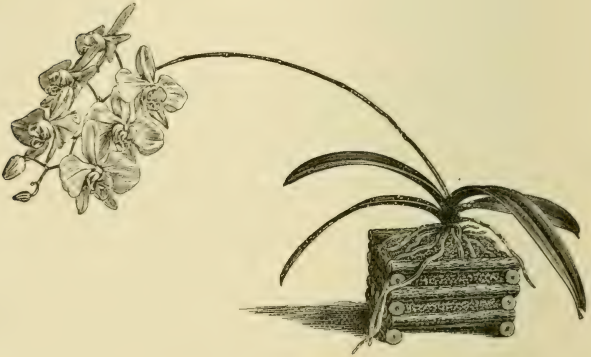


Fig. 101. Phalænopsis amabilis
(much reduced).

P. gloriosa has been given a specific name, but it is nearly allied to P. amabilis. Its flowers are a trifle larger, and it also differs slightly in the callus on the lip. As regards its beauty, the name is appropriate.

P. Esmeralda.—A small, pretty-flowered species, with erect flower-spikes. The leaves are thick and fleshy, grey-green, with a few dull brown spots; in strong plants the leaves do not exceed 3in. in length. The flower-spike varies in length from 6in. to 1½ft., and bears from six to a dozen or more flowers, each ½in. across; sepals and petals equal in size, and coloured light rosy purple; lip deep purple, with a pair of yellowish lateral lobes and two slender, narrow appendages near its base. A native of Burmah and Cochin China; introduced about 1877.

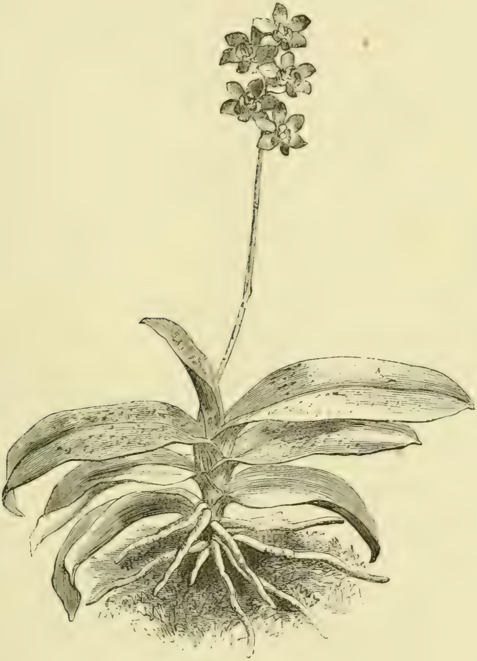


Fig. 102. Phalænopsis Esmeralda
(½ nat. size).

Fig. 102.

A colour variety of this species has been described under the name of *P. antennifera.* It differs from the type only in having flowers a little darker in colour.

P. grandiflora.—Probably the finest Phalænopsis as regards the size and purity of its flowers, and certainly one of the loveliest Orchids in cultivation. Its light green, oblong leaves are very thick and leathery, healthy plants being ornamental even when not in blossom. Its strikingly beautiful flowers are from 4in. to 5in. in diameter, and are produced on stout, long, arching, purplish-coloured racemes. The petals are much broader than the sepals, which they overlap, both being pure white. The three-lobed lip is chiefly white, the front margins of the side lobes having a yellowish tinge; the middle lobe is spear-shaped, the extremity separating into two yellow filaments, which curve upwards. It was introduced in 1847 from Java and Borneo, where it is found attached by its roots to the trunks of trees. It flowers at all seasons of the year, generally from March to October.

Botanical Magazine, t. 5184.

P. intermedia.—This is an interesting and very handsome plant. It was long supposed by Orchidists to be a natural hybrid between P. amabilis and P. rosea, a supposition proved to be true by Messrs. Veitch, who, in their Orchid-houses at Chelsea, succeeded in obtaining a plant similar to imported ones by crossing these two species. In habit it more nearly resembles P. amabilis, its leaves being a paler green. The flowers are not so large, and the scapes have a brownish-purple tinge. The oblong, pointed sepals are white, as are also the somewhat four-sided, much larger petals, with the exception of a few rose-coloured spots at the base. The lip is small; the side lobes are erect, rosy purple, spotted with crimson; the central lobe is rich crimson, terminating in two short attenuations at the apex.

Introduced from the Philippine Islands in 1867. Syn. *P. Lobbii.*

Var. *Brymeriana* is very rare and beautiful. It differs from the type in having its two lower sepals spotted with purple at the base, and the petals of a rosy-lilac tint; also in the side lobes of the lip being partly white, spotted with magenta.

Var. *Porteana* is the finest form of P. intermedia. Its leaves are about 1ft. long, and of a deep green. The racemes are branched, and bear numerous large flowers, in which the lip is rich purple-rose, the base of the central lobe being tinged with orange-yellow. It is very rare.

Gardeners' Chronicle, new series, v., p. 369.

P. Lowii.—A delightful plant, with flowers of extreme elegance and beauty. Its leaves are deep green, tinged with purple, and four or five occur in a tuft on each plant; they are about 4in. long, 1½in. broad, and pointed. The flower-spike is slender, of a purplish tinge, and carries from five to twenty flowers. The latter are 1½in. in diameter, with the oblong sepals and the broader, rounded petals white, flushed with purple. The lip is three-lobed, and of a rich violet-purple, the side lobes being slightly paler than the central one. The apex of the column is pale purple, and in shape may be compared to an elephant's trunk. The flowers expand during the summer months, and remain for some weeks in beauty. This plant is commonly supposed to cast all its leaves annually, but several specimens have come under our notice which retained their leaves throughout the year. It has been suggested in explanation of this that both deciduous and evergreen forms of the plant exist in a wild state, the variation being due to differences in climatic conditions. We have seen specimens succeed admirably when grown on rafts of teak, with sphagnum placed about the roots, and suspended in a very moist and shaded position in a stove, the moss being kept damp and growing throughout the year. It is, however, one of the most difficult of Phalænopses to cultivate. A native of Moulmein, Borneo, &c.; introduced in 1862.

Botanical Magazine, t. 5351.

P. Luddemanniana.—This is a small-growing plant, with thick, oblong leaves 6in. to 8in. in length. On cultivated plants the flower-spike rarely reaches more than 8in. in length, and bears a few handsome flowers towards the apex. The flowers are between 2in. and 3in. wide, the sepals and petals being oblong and pointed, with the ground-colour white, prettily marked with transverse lines of violet-purple towards the base, and of brown towards the points. The middle lobe of the lip is oblong, and of a deep violet colour, the side lobes being narrower and pale purple. On account of its distinctness, and the long time its flowers last, this species is well worth growing. It is remarkable for the freedom with which it produces young plants on the old flower-spikes, an exceptional character among Orchids, and one which renders the increase of the species easy. A native of the Philippine Islands; introduced in 1867.

Botanical Magazine, t. 5523.

P. Sanderiana.—A very handsome plant of recent introduction, probably a natural hybrid between P. Schilleriana and P. amabilis. The leaves are almost elliptical and in colour nearly resemble those of P. Schilleriana. They do not, however, grow to such a length, and are usually of about the same size as those of P. amabilis. The flowers are from 3in. to 4in. across. The sepals are broadly ovate and about 1½in. long, the larger petals being unusually broad and full. The colour of sepals and petals is generally a soft rose, sometimes with a purplish tinge.

The lip is three-lobed, with the side lobes almost orbicular, and white, spotted at the base with purple; the middle lobe is white, tinged in certain places on the margin with yellow, and separates at the apex into two long, slender filaments, which curl upwards. This showy Orchid flowers at various seasons, oftenest perhaps in summer. It is a native of the Malayan Archipelago, and was introduced in 1883.

Williams' Orchid Album, v., t. 209.

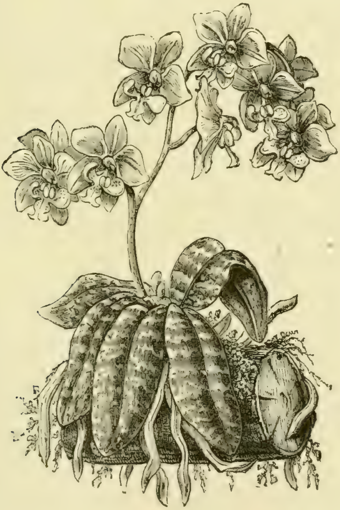


Fig. 103. Phalænopsis Schilleriana
(much reduced).

P. Schilleriana.—This is certainly one of the most desirable of the genus, and both in foliage and flower is an extremely handsome Orchid. Its beautiful, oblong leaves are sometimes as much as 1½ft. in length, with the upper surface of a dark green colour, profusely and irregularly mottled with greyish white; on the under side they are purple. The flower-scapes are from 1½ft. to 3ft. long, and branch freely, bearing numerous flowers 2½in. to 3in. in diameter. A single inflorescence is recorded as having carried 174 flowers. The sepals are obovate, and, like the larger and more rounded petals, are light mauve or rose, white at the margins. The side lobes of the lip are similarly coloured, the central one being usually paler, sometimes white, with the extremity dividing into two divergent horns; at the base is a yellow callus, spotted with reddish brown. The species is variable in colour, but all the forms are exceedingly pretty. The roots form a notable feature of the plant, being flat and rough, and produced in great abundance. It is said to have now become scarce in a wild state, so that in a few years it will probably be a much more valuable Orchid. It was introduced from the Philippine Islands in 1860.

Fig. 103; Botanical Magazine, t. 5530.

P. Stuartiana.—A distinct and handsome species, which is deservedly becoming more popular every year. It occasionally displays the remarkable and, amongst Orchids, very unusual property of producing young plants on the roots. The leaves are oblong, obliquely notched at the tips, and from 6in. to 12in. in length; when young they are prettily marbled on the upper surface. In some forms the leaves become almost entirely green as they grow older; but in many the mottled surface remains fixed, and adds to the beauty of the plant. The flowers are borne on branching racemes, and are about 2in. across. The petals are rhomboidal, and more than twice the width of the oblong sepals; the lower half of the lateral sepals is of a pale sulphur-yellow, spotted with reddish brown, the upper half, together with the petals, being pure white. The ground of the lip is white, with the side lobes and the central part of the front lobe freely and irregularly spotted with cinnamon-red. The apex is divided into two curving filaments, which in some forms are so much lengthened as to look like tendrils. It was introduced to this country in 1881 by Messrs. Low, of Clapton. It flowers during the first three months of the year.

Botanical Magazine, t. 6622.

Var. *nobilis* has larger flowers, with fewer but larger spots on the lip and side sepals.

Var. *punctatissima* has the sepals and petals profusely spotted with purplish red.

P. violacea.—This has pretty, sweet-scented flowers of distinct colour. Its leaves are tongue-shaped, 8in. to 12in. in length, and of a light, shining green. The inflorescence is short, and does not develop more than two or three flowers at once. These are 2in. to 2½in. in diameter, with the broadly lance-shaped sepals and petals of a violet-rose towards the base, changing at the apex to a yellowish tint. The lip is of a rich purplish rose, the callus being yellow. This Orchid flowers from May to October, lasting a long time in perfection. It is a native of the Malayan Archipelago, and was introduced in 1861.

Williams' Orchid Album, t. 182.

Var. *Bowringiana* has light yellow flowers, striped and spotted with purple.

Var. *Schrœderiana* has the sepals and petals white, tinged with rose-purple at the base.

CHAPTER LI.

PLEIONE.

ALTHOUGH included by modern botanists in the genus Cœlogyne, the several species to which the name of Pleione is still popularly applied are sufficiently well marked to justify the retention of the name for use in gardens. Pleiones are distinguished by their fleshy pseudo-bulbs, which are only of annual duration, shrivelling as the new ones develop, as in some Calanthes; by their deciduous leaves; by their scaly buds; by their usually one-flowered scapes subtended by a large, loose, sheath-like bract, and which precede the new growth; and by their flowers fading before the leaf is developed. Structurally the flowers are similar to those of Cœlogyne.

All the Pleiones are natives of the mountains of India, and may be termed distinctly alpine. Two of them grow wild in regions where snow and frost sometimes occur. They are found, often in great abundance, clothing the trunks of trees and clinging to moist rocks in positions exposed to full sunlight.

Culture.—Pleiones are so easy to grow and flower that room should be found for a few pans of them in even the smallest collections. Many growers fail with them through giving them tropical treatment and excessive coddling. As a matter of fact, they are all cool-house

Orchids. They are very successfully grown at Kew, where they are treated as follows: Immediately after the flowers fade, the soil is shaken from the pseudo-bulbs, and the old roots trimmed to a length of about 2in., care being taken not to injure the new roots, which by this time are pushing from the base of the new growth. P. lagenaria, P. maculata, and P. præcox, are usually in their new pots by the first week in December. The pseudo-bulbs are planted about 2in. apart, in pans about 1ft. in diameter, which are three-parts filled with drainage; the compost used is equal parts of very fibrous peat and loam, with a sprinkling of chopped sphagnum and silver sand.

When planting, it is usual to commence at one side of the pan, placing the pseudo-bulbs on the top of the soil, and fixing them firmly by means of the old roots. When finished, the soil is about 1in. higher in the middle than the rim of the pan. The plants are then placed on a shelf in a cool house, and not watered until the leaves are well developed and the new roots have penetrated well into the soil. It is most important that this point is carefully observed, as Pleiones, like Calanthes, may be ruined by once giving them water before they are in a fit condition to receive it. About the beginning of April the plants are placed in an intermediate temperature, close to the roof, in a light, moist house; here they are freely watered, receiving also a dose of weak liquid manure twice a week. When the leaves are mature, the plants are again placed in a cool house, where the pseudo-bulbs rapidly develop and ripen, and the leaves finally turn yellow and fall off. No water is given after this until the new growth begins again, and even then it is unnecessary unless the soil has become quite baked and hard. The species multiply themselves by means of offset bulbs, or, rather, one old pseudo-bulb will sometimes develop two or three new ones. These must be separated when the plants are repotted.

P. Hookeriana.—A dainty little gem, distinct from the others in developing leaves and flowers together, and in requiring constant cool treatment under cultivation. It has purple pseudo-bulbs, about the same size and shape as a robin's egg. The leaves, when mature, are ovate, and about 2in. long, deep green, and plaited. The flowers are borne singly from the centre of the new growth, and are 2in. wide. The sepals and petals are bright rose; the lip scoop-shaped, white, with a few brown-red blotches on the lower part. This species is found wild at an elevation of 8000ft. to 10,000ft. on the Sikkim Himalayas, usually clinging to the moss-covered trunks of trees. In the cold season the temperature of these regions is often many degrees below freezing-point. It thrives in cultivation when attached to a block of fern-stem, or to an ordinary block padded with sphagnum; or it may be grown in a shallow pan. A position close to the roof in a cool, moist house, such as suits Odontoglossums, is the best for this Pleione. The flowers are developed in April or May. It was introduced in 1878.

Botanical Magazine, t. 6388.

P. humilis.—This distinct and pretty species flowers much later than the others, March being the month when it is usually at its best. Its dark green, flask-shaped pseudo-bulbs have long necks, are furnished with dark green foliage, and are partly enveloped in brown sheaths. The flowers are not developed until long after the plant has lost its foliage; they are fully 3½in. across. The sepals and petals are narrow, spreading, and pure white, or sometimes tinted with rose, and glistening like frosted silver; the lip is funnel-shaped, widely expanded at the mouth, the margin fringed, and the middle ornamented with raised, ciliated ridges, which run down into the throat; the colour of the lip is lilac, suffused with chrome-yellow, sometimes spotted and blotched with reddish brown. This species is found at an elevation of 7000ft. in Nepal, and was introduced in 1850. The plant requires the same treatment as the other species, except that it must not be repotted until about April, the time when the flowers are over.

Botanical Magazine, t. 5674.

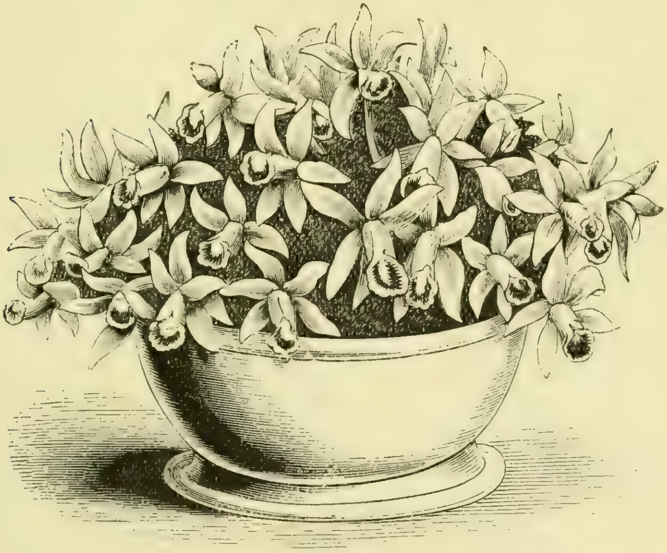


Fig. 104. Pleione lagenaria
(much reduced).

P. lagenaria.—This species is the most effective of all the cultivated Pleiones, well-managed plants producing in October or November a display of flowers of the most brilliant character. Its pseudo-bulbs are 2in. high, flask- or bottle-shaped, flattened below the neck and folded over like the lid of a box; their colour is dull green, mottled with brown. The flowers occur singly, or sometimes in pairs, from scale-like buds at the base of the mature pseudo-bulbs; they are 4in. across. The sepals and petals are lance-shaped, and coloured rosy lilac; the lip large, pale lilac, blotched with yellow and deep crimson on the side parts; there are five crested lines in the throat. We have seen pans 10in. across containing plants of this species bearing over eighty flowers expanded at one time. It was introduced from the Himalayas, where it is very common on trees and rocks at high elevations, in 1850.

Fig. 104; Botanical Magazine, t. 5370.

P. maculata.—This has short, rounded, compressed, green pseudo-bulbs, with a ring-like ridge near the top. The leaves are bright green, and they spring from a bud which is inclosed in green, curiously-inflated sheaths. The flowers, which immediately precede the leaves, are short-stalked, spreading, fully 4in. across; the sepals and petals are oblong, pointed, and pure glistening white; the lip is funnel-shaped, rounded, the edges entire, the seven ridges or crested lines coloured yellow, the rest being white, blotched with crimson. The foliage falls in September, and the flowers are developed in November, remaining fresh about a fortnight. This species is one of the most delightful of winter-flowering Orchids. It is found at lower elevations, consequently it requires a little more warmth, than the others. It should be grown in an intermediate, rather than in a cool, temperature, although under the treatment recommended for Pleiones generally it makes large bulbs and flowers fairly well. A native of the mountains of Northern India, whence it was introduced by Messrs. Veitch, through their collector Thomas Lobb, in 1850.

Botanical Magazine, t. 4691.

P. præcox.—There is very little difference in the shape, size, and colour, of the pseudo-bulbs of this and of P. lagenaria. The flowers also of these two resemble each other, but those of the first-named appear about a month later, are darker in colour, and larger, whilst the lip is conspicuously fringed, and lacks the longitudinal blotches on the side which characterise P. lagenaria. It was introduced from the Himalayas in 1840. Syn. *P. Wallichiana.* Botanical Magazine, t. 4496.

CHAPTER LII.

PROMENÆA.

FOUR pretty little species of Promenæa are in cultivation, eight being known to botanists. The genus is related to Zygopetalum and Paphinia, differing from them, however, in the following particulars: The plants are very small, seldom exceeding 4in. in height; the flowers are usually solitary, on short, drooping scapes; the lip is distinctly three-lobed; and the crest is formed of a tuberculose ring. The genus is peculiar to Brazil.

Culture.—The species included here are found at high altitudes, and are distinctly alpine. They therefore thrive when cultivated in a cool house, such as suits Odontoglossums, and they require the same kind of treatment as answers for such species as O. Oërstedii and O. Rossii. A compost of peat-fibre and good sphagnum, with a few bits of charcoal scattered through it, suits Promenæas, and they do not require much root-room. Some cultivators prefer to attach them to blocks of soft fern-stem; others grow them well in small pans almost filled with drainage. The plants require to be kept moist at the root at all times, enjoying an abundance of water during summer. A position close to the roof, where they would be shaded only from very bright sunlight, is the best for them. They flower irregularly, but generally about July.

P. citrina.—A dainty little Orchid, and the best-known of the Promenæas. It is similar to P. Rollissoni in every character except the flowers, which are smaller. The sepals and petals are pale lemon-yellow, and the column is streaked with red; the lip is three-lobed, yellow, with crimson spots in the throat. It is a native of Brazil, whence it was introduced in 1838. Syns. *P. xanthina*, *Zygopetalum citrinum.*

P. graminea.—This species is singular in not possessing any pseudo-bulbs, the leaves rising in a fan-like manner directly from the root. They are jointed about 1in. from the base, lance-shaped, channelled, 6in. long, and bright green. The flowers are produced in clusters from the bases of the leaves, each on a separate scape, which is about 2in. long and decumbent. In form and colour the flowers are like those of S. stapelioides; but the sepals and petals are narrower, and thinly spotted with rich, deep brown, whilst the lip is oval, with scarcely any side lobes, the margin crisped, and the colour yellow, shaded with rose and blotched with crimson-brown; the large column is yellow at the top. This plant is not common in cultivation. It has been called *Kefersteinia*, *Maxillaria,* and *Zygopetalum.* It is a native of Brazil, and was introduced in 1857.

Botanical Magazine, t. 5046.

P. Rollissoni.—This has roundish, compressed, green pseudo-bulbs less than 1in. long, and two-leaved. The leaves are lance-shaped, recurved towards the tips, and from 2in. to 3in. long. The flowers are borne singly on short, decumbent scapes, which spring from the newly-ripened growth, and each flower is 2in. across; the sepals and petals are similar, oblong, with acute points, spreading, and coloured pale, clear yellow; the lip is three-lobed, the front lobe being the largest and coloured yellow, whilst the side lobes are erect, and spotted and barred with

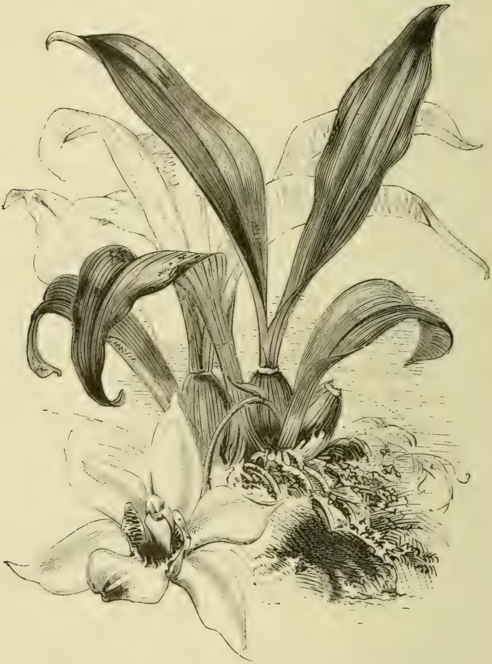


Fig. 105. Promenæa Rollissoni
(nat. size).

purple. When properly cultivated, this species forms a compact tuft of healthy leaves, and produces annually a very prolific crop of its pretty flowers, which remain fresh on the plant about a month. It was introduced from Brazil about 1838.

Fig. 105 (for which we are indebted to the Editor of the "Garden"); Botanical Register, 1838, t. 40.

P. stapelioides.—A tufted, compact little plant, with dusky-coloured flowers. The pseudo-bulbs are ovate, four-angled, less than 1in. long, bearing one or two lanceolate, glaucous-green, striated leaves 3in. to 4in. long, and herbaceous in texture. The scape springs from the base of the matured pseudo-bulb, and is decumbent, 1½in. long, and usually one-flowered; each flower is 1½in. across; the sepals and petals are ovate, spreading, greenish yellow, with transverse, purple-brown bands, as in Stapelia bufonia (whence the specific name). The three-lobed lip is black-purple on the ovate central lobe, paler towards the margin, and streaked the same as the petals; the two horn-like side lobes are also coloured like the petals, and the column is citron-yellow. A native of the Organ Mountains of Brazil; introduced in 1830.

Botanical Magazine, t. 3877 (as *Maxillaria stapelioides*).

CHAPTER LIII.

RENANTHERA.

A genus of tropical epiphytes of which only half-a-dozen species are known, and two of which are cultivated in gardens. They have slender, sometimes branching stems, occasionally 12ft. to 14ft. high, bearing a row of leaves on either side. The flower-stems originate at the nodes, and bear the blooms in panicles or drooping spikes. The segments of the flower are spreading, the dorsal sepal and the petals being usually smaller and narrower than the two lateral sepals; the lip is small, and attached to the base of the column—on the under side is a short, conical spur. The species are natives of tropical Asia and the Malayan Archipelago.

Culture.—From March to October—which is the growing season of the two species described—the plants require the hot, moist atmosphere of the stove. Both are very free-rooting, and R. coccinea — the commoner species of the two—should be fastened on a block of fern-stem or wood, to which it will soon become firmly attached by its roots. Birch-wood has been recommended for the purpose, but we prefer the stem of a tree-fern, such as Dicksonia antarctica, the soft, spongy roots holding the moisture and agreeing with the roots of the Renanthera. Grown in this manner, the plants require to be moistened once or twice a day in summer, under which treatment the stems will lengthen 1ft. or more in a season. Only during the hottest sunshine should they be shaded, a free exposure to the light being most important if flowers are to be obtained. R. Lowii should be potted in clean sphagnum, with which a few pieces of charcoal may be mixed. The pots should be of good size and drained to two-thirds their depth. Like R. coccinea, it needs abundance of light, heat, and moisture when growing. Both species, when at rest, should have only just sufficient water to prevent the foliage from shrinking.

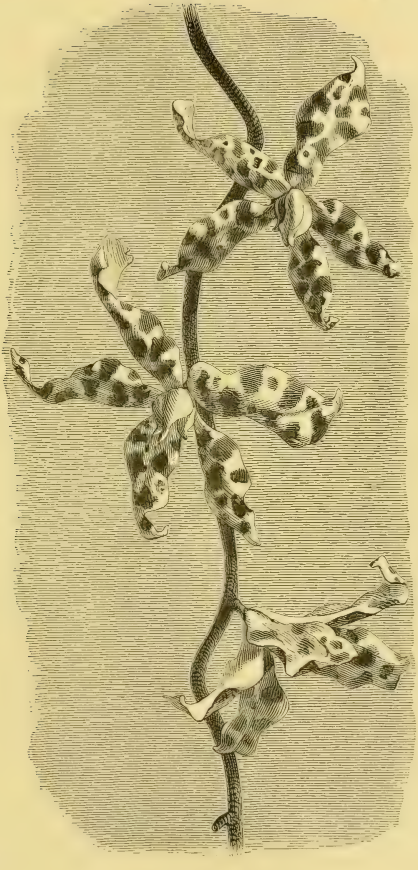
R. coccinea.—Owing to the difficulty of inducing this species to flower, it is not a popular plant in gardens; it is, however, very easily grown, and when in bloom is a most magnificent sight. It is of climbing habit, and in its native country clings to the trunks of trees by the white, fleshy roots emitted from the slender stem, which is round and scarcely the thickness of a man's finger. The strap-shaped, dark green leaves are arranged in two rows, and are 4in. to 5in. long, and notched at the tips. The flowers are 2in. to 3in. in depth, and are somewhat sparsely produced in loose, branching racemes, measuring 2ft. to 3ft. through at the base. The upper sepal and the two petals are strap-shaped, blunt at the tips, and coloured deep red, blotched with orange. The two lower sepals are larger, and form the most conspicuous part of the flower, being of a deep crimson, marked with paler transverse lines; in shape they are oblong, slightly widened towards the apex, with undulated edges. Both sepals and petals on the outside are orange-coloured, changing to red at the margins. The lip is small, the front and sides being deep crimson, and the throat white; it is furnished with a pointed, conical spur. This species was introduced from Cochin China in

1816, and it is recorded as having flowered for the first time in 1827.

Botanical Magazine, t. 2297.

R. Lowii.—A showy and very remarkable species, of which but comparatively few plants are at present in cultivation. It is of a tall, semi-climbing habit, with a stem 1in. in diameter, bearing dark green, strap-shaped, leathery leaves, 2ft. to 3ft. long. The drooping flower-spikes are 6ft. to 12ft. in length, and slightly hairy, each bearing from thirty to fifty flowers; a plant under cultivation is recorded as having carried twenty-six spikes at one time. An extraordinary characteristic of this species is that of invariably producing, at the base of every spike, a pair of flowers which differ in shape, colour, and marking, from all the others. Under Catasetum a somewhat similar occurrence was alluded to; but in that genus the flowers on the same plant differ in being male and female, whereas in Renanthera Lowii there does not appear to be any sexual difference. The basal pair of flowers are tawny-yellow, dotted with crimson; the sepals and petals being lance-shaped and bluntish. All the other flowers are larger, and have lance-shaped, wavy, more acute sepals and petals; they are pale yellowish green, irregularly blotched with a rich reddish brown. The lip is about half the length of the sepals and petals, the whole flower being 3in. in diameter. A native of Borneo, where it is stated by Mr. Wallace to grow on the lower branches of trees, its flower-spikes nearly touching the ground. Syns. *Arachnanthe Lowii*, *Vanda Lowii*.

Plate (for which we are indebted to the Editor of the "Garden"); Botanical Magazine, t. 5475.



FLOWERS OF RENANTHERA LOWII

($\frac{2}{3}$ nat. size).

CHAPTER LIV.

RESTREPIA.

About twenty species of Restrepia are known, all natives of tropical South America. Of these the majority are inconspicuous, and are not usually considered worthy of cultivation; but the three here described are exceptions—indeed, they may be classed with the gems of the smallest among the cool Orchids. Their curious structure gives them also an additional charm. The slender stems are produced in tufts, and each carries a single leaf. The flowers in all the species are borne on one-flowered scapes at the top of the stem, which continues to blossom for several years. The plants are found on mossy trees, at considerable elevations on the Andes. The genus is allied to Masdevallia.

Culture.—The cultivation of Restrepias is very simple, no Orchids adapting themselves to artificial treatment more readily. They should be placed in the cool house, under conditions similar to those recommended for the cooler Odontoglossums. They succeed well when planted in baskets, in a compost of peat and sphagnum, and should be suspended from the roof. Water is required in smaller quantities in winter, but no attempt at resting should be made.

R. antennifera.—This lovely little plant has slender stems 4in. to 6in. high, each surmounted by a single heart-shaped, leathery leaf 2in. to 4in. long. The flower-scapes—several of which are produced at the top of each stem—are about 4in. in length, very slender, and bear each one flower of exquisite beauty. The upper sepal is 1½in. long, and thread-like, except at the base, and it has a little knob on the tip; in colour it is yellow and purple. The petals are similar in shape and colour, but are much smaller; their antennæ-like appearance gives rise to the specific name. The lateral sepals are the prominent feature of the flower; they are united by their inner margins, except near the apex, and form one oblong segment 1½in. long, which is yellow, beautifully marked with longitudinal lines of purplish-crimson. The lip is similarly coloured, but small and inconspicuous. This species grows on the trunks of trees, at an altitude of 6000ft. to 12,000ft., in New Granada and Venezuela, and was introduced in 1869. It flowers from November to February. Syns. *R. guttata*, *R. maculata*.

Botanical Magazine, t. 6288.

R. elegans.—A very elegant little plant, resembling R. antennifera in everything except size. Its stems are only 2in. to 3in. high, clothed with pale green scales, and bearing an apical, solitary, oval leaf 1in. to 2in. long, leathery in texture, dark green on the upper surface, and paler beneath. The flowers are borne on slender, filiform stalks about 2in. in length. The dorsal sepal is lance-shaped, white, streaked with purple, the upper part being drawn out into a yellow tail, with a club-shaped tip; the petals are similar, but only half the size; the two lateral sepals are joined so as to form an oblong, concave blade, which is yellow, marked with numerous purple dots. The whole flower measures from 1½in. to 2in. vertically. A native of Caracas, in the neighbourhood of Tovar, at an elevation of 6000ft. Introduced in 1850. It flowers in January and February.

Botanical Magazine, t. 5966.

R. pandurata.—A charming little plant, smaller even than R. elegans. It blooms very freely, and is at least as attractive in the size and markings of its flowers as any of the pigmy Orchids. The stems are 2in. high, inclosed in thin sheaths, and each bears a stiff, leathery, ovate leaf 2½in. long, deep green above, purplish beneath. The flowers are produced in the same manner as in R. elegans, and are similar in size. The tail of the upper sepal is short; the lower sepals are white, with numerous bright crimson spots; the lip is fiddle-shaped, and has a bristle on each of the side lobes. This rare little gem was imported by Messrs. Veitch from New Granada a year or two ago.

CHAPTER LV.

SACCOLABIUM.

AMONGST the smaller-flowered Orchids of tropical regions cultivated in this country, the genus Saccolabium assuredly occupies the first place. In the majority of the species the flowers are individually small—rarely, indeed, more than 1in. in diameter—but any deficiency in size is amply compensated by the profusion in which they are produced; whilst for delicacy of colour, fragrance, and display they are unsurpassed. At the present time, the species known number between thirty and forty, some of these being recent discoveries in Burmah, &c. Almost every one is attractive enough to be worth cultivating, many of them being of exquisite beauty. They are dwarf, evergreen plants, with fleshy, channelled (rarely terete) leaves, arranged in two opposite rows on the upright stem. In the majority the flowers are numerously and closely set on upright or pendulous racemes, which spring from the axils of the leaves. In some species, as in S. bellinum, the flowers are few, but comparatively large, and are arranged in a corymb or head. The spreading sepals and petals are mostly alike in size and colour, the salient feature of the flower being the lip, which is attached to the base of the column, and is prolonged downwards, forming a spur or pouch—a character on which the generic name is founded. The species are scattered over tropical India, Burmah, and the Islands of the Malayan Archipelago.

Culture.—In their natural state, Saccolabiums grow on the upper branches of trees in some of the moistest and hottest regions in the world: under cultivation they therefore require stove treatment. During the growing season, which extends from March to October, a temperature ranging from 70deg. to 80deg. is needed, whilst on very hot days it may safely be allowed to rise 5deg. to 10deg. higher. When growth has fairly commenced, the plants must be kept uniformly moist at the root, and the atmosphere as saturated as is consistent with adequate ventilation. The walls, floor, staging, and, in fact, every available space, should be frequently wetted, and towards evening on the brightest days a fine spray may be distributed over the plants by the syringe. One of the commonest errors in the cultivation of Saccolabiums is that of keeping them too much shaded. Only during hot sunshine is it necessary to let down the blinds. For this reason it is a convenient arrangement during the season of growth to place the plants on the same side of the house as the Dendrobiums. They thrive best when suspended about 8in. from the roof-glass, and should be planted in teak baskets, partly filled with clean potsherds and pieces of charcoal, finishing at the top with a good layer of live sphagnum. If it is not possible to suspend them, the next best method is to grow them in cylinders 9in. to 12in. high, with cross-pieces half-way down, the lower half remaining empty.

About the end of February the roots become green at the tips, and commence to lengthen. As soon as this is observed, the old sphagnum should be removed and replaced with new, at the same time cutting off decayed roots, and thoroughly cleansing the plants. If, as is usually the case, the roots are clinging to the basket, they ought not to be disturbed; the old material can be readily washed out with a syringe.

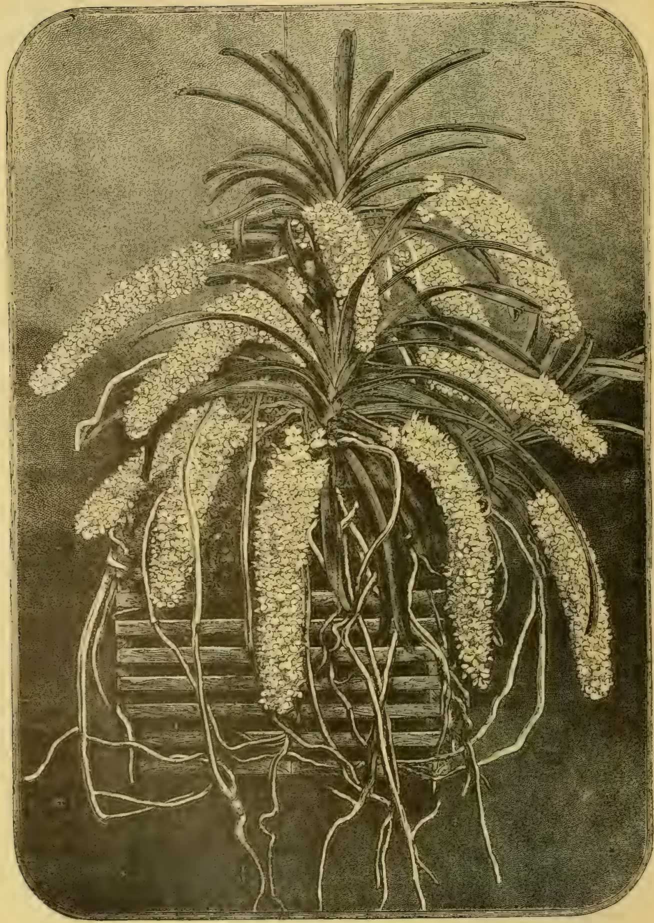
During winter, Saccolabiums should be subjected to much cooler and drier conditions. The temperature may range from 55deg. or 60deg. at night to 65deg. or 70deg. by day, and much less water is then required; care must be taken, however, that the plants are not allowed to suffer from excessive drought.

S. ampullaceum.—A dwarf and pretty species, with an erect stem from 6in. to 8in. high, on which are closely set, in two opposite rows, the short, strap-shaped, channelled leaves, the deep green surface of which is thickly and minutely dotted with dull purple. The erect racemes spring from the axils of the leaves, and are from 4in. to 6in. high. The flowers are crowded on the racemes, each being ¾in. across, and of a deep magenta-rose colour; the lip is furnished with a pale rose-coloured, cylindrical spur. This charming little Orchid deserves to be grown in every warm house, where it should have a position within a few inches of the roof-glass. It is a native of Northern India, whence it was introduced in 1839. It flowers in early summer. Syn. *S. rubrum.*

Botanical Magazine, t. 5595.

Var. *moulmeinense* is a geographical form, superior to the type in its stronger growth, its larger flowers, and longer racemes.

S. bellinum.—This charming little Orchid is especially worthy of notice as bearing the most remarkable flowers of any Saccolabium as yet introduced to cultivation. It also represents that section of the genus with large but comparatively few flowers arranged in a corymb. The leaves are produced in the distichous manner characteristic of the whole genus, are pale green, 6in. to 8in. long,



SACCOLABIUM BLUMEI

(much reduced).

1in. broad, and notched at the ends. The racemes bear from three to seven flowers, each of which is 1½in. in diameter and fleshy in texture; the sepals and petals are ovate, with acute points, and are coloured olive-green, with numerous blotches of rich brown; the basal part of the lip is in the shape of a cup, with a horizontal, ledge-like margin, measuring 1in. across, deeply fringed, and pure white, except on the centre, where there is a patch of bright yellow; the cup itself is white, dotted inside with mauve. This species was introduced from Burmah, in 1884, by Messrs. Low, of Clapton. It flowers during the first three months of the year, and is one of the most attractive Orchids in blossom at that season.

Williams' Orchid Album, t. 156.

S. Blumei.—One of the best-known and finest of Saccolabiums. The stem is erect, and bears two opposite rows of channelled leaves 8in. to 12in. long, arching, unevenly jagged at the tips, bright green, distinctly marked with longitudinal lines of a deeper shade. The flowers are numerous, on pendent, cylindrical racemes, 12in. to 14in., and on especially vigorous plants as much as 2ft., long; the sepals and petals are tinged and dotted with bright purplish rose upon a white ground, the lip being entirely rosy magenta; each flower is ¾in. in diameter. This species flowers in July and August, and produces a very charming effect. A native of India and Java. Syn. *Rhynchostylis retusa præmorsa.*

Plate (for which we are indebted to the Editor of the "Gardeners' Chronicle").

Var. *majus*, a native of Moulmein, is of more robust habit, the racemes, as well as the individual flowers, being larger.

S. Heathii is the name given to a beautiful, pure white variety of S. Blumei. It is one of the rarest and most valuable of Orchids, and is said to have been found hitherto on one tree only. In May, 1887, a plant of it was sold for 150 guineas.

S. cœleste.—A singularly beautiful species, rarely attaining 1ft. in height, having deep green, decurved leaves, and erect, densely-flowered racemes 6in. to 9in. high. It is rendered distinct by the unusual colour of the flowers, which are white, with the tips of the sepals and petals and the major portion of the lip sky-blue. Each flower is ¾in. across; the sepals and petals are almost equal, cuneate-oblong, and incurved; the lobed lip is spreading in front, and is modified at the back into a flattish, hooked spur. This plant requires moist, tropical treatment all the year round, with plenty of sunlight and air whilst growing. A native of Siam, flowering during July and August. Syn. *Rhynchostylis cœlestis.*

Williams' Orchid Album, t. 361.

S. curvifolium. — A small, free-flowering species, very pretty when in bloom. The linear, curved leaves are channelled, rigid in texture, narrowing to the apex, where they are unequally bilobed. The racemes are erect, about 6in. high, and densely clothed with sparkling, bright orange-scarlet flowers, which are about 1in. in diameter; the upper sepal and the petals are obovate; the lateral sepals are broader at the base. A bright effect is given to the flowers by the violet-coloured anther-case. A native of Nepal, Burmah, and Ceylon. It flowers in May and June.

Botanical Magazine, t. 5326 (as *S. miniatum*).

Var. *luteum* has bright yellow flowers; otherwise it is similar to the type. It is rarely met with.

S. giganteum.—This is a large and handsome species, and should be in every large collection of Orchids. The leaves are borne on a short, erect stem, and are 1ft. long, 3in. wide, firm in texture, and obliquely notched at the ends. The cylindrical, pendent racemes are 1ft. in length, and about 3in. through, bearing numerous closely-packed flowers, each slightly over 1in. across; the sepals and petals are cream-coloured, with a few bright purple spots, usually near the base. The lip is wedge-shaped, the apex being divided into three rounded lobes; it is of a deep amethyst-purple, with veins of a darker shade. This species blossoms during winter and early spring, its beautiful and exquisitely fragrant flowers remaining perfect for a month or six weeks after opening. It was first introduced in quantity from Rangoon by Messrs. Veitch in 1866, although a few plants were known in cultivation for a considerable period previously. Syn. *Vanda densiflora.*

Botanical Magazine, t. 5635.

Var. *illustre* has leaves of larger size, and longer racemes. The flowers are not so closely arranged, but they are larger, and the colour of the lip is more brilliant. A native of Cochin China.

S. guttatum.—A handsome, free-flowering species, with strap-shaped, channelled, and somewhat fleshy leaves, 1ft. to 1¼ft. long, curiously jagged at the tips. The drooping, cylindrical, densely-flowered racemes are as long as the leaves, from the axils of which they originate. Each flower measures ¾in. across; the ovate sepals and narrower petals are white, spotted with rosy purple; the lip is wholly purple at the apex, paler towards the base, where the cylindrical, hollow spur is developed. The blossoms, which are delightfully fragrant, appear chiefly in June and July, and remain in good condition for upwards of a month. A native of Nepal, Java, &c. This Orchid first flowered at Kew in 1820. As may be inferred by comparing the descriptions,

S. Blumei and S. guttatum are nearly allied: by the late Dr. Reichenbach, indeed, they have been united as varieties under one species—*Rhynchostylis retusa.* S. Blumei is easily distinguished by the longitudinal lines of deep green on the leaves, as well as by differences in the colour of the flowers. Syn. *Rhynchostylis retusa guttata.*

Botanical Magazine, t. 4108.

Var. *giganteum* is a splendid Orchid, differing from the type in the larger size of its leaves, racemes, and individual flowers.

S. Hendersonianum.—One of the prettiest of the dwarf species, well worth growing, both for its beauty and for its distinct character. The leaves are 5in. to 6in. long, strap-shaped, leathery, and although set in a distichous manner on the stem, spread irregularly in various directions. The raceme is 6in. in height, the numerous flowers forming an upright, cylindrical mass. The flowers are $\frac{2}{3}$in. in depth; the sepals and petals are of a bright rosy red; the lip is white, and consists of a cylindrical spur, at the mouth of which are three small teeth. A native of Borneo. This species is stated to have been introduced into Europe in 1862, but it did not flower in this country until 1874.

Botanical Magazine, t. 6222.

S. miniatum.—This is very similar in all its parts to S. curvifolium, differing only in the flowers, which are bright orange-red, and are produced in short, compact racemes. It blooms in March. Native of Java.

Botanical Register, 1847, t. 58.

S. Turneri.—According to Mr. Williams, this is a species in the way of S. guttatum, but much finer, having racemes 2ft. long, densely covered with white, lilac-spotted flowers. It was introduced in 1878, when a beautiful specimen, bearing four very fine spikes of bloom, was exhibited at Manchester. A native of India.

S. violaceum.—This has leaves 10in. to 12in. long and 2in. wide, borne in two opposite rows on an erect stem; they are of a dark green colour, with longitudinal lines of a deeper shade, and are distinctly two-lobed at the tips. The flowers are numerous, on pendulous racemes 1ft. or more long, each flower being 1in. in diameter. The sepals and petals are white, spotted with pale mauve; the lip is dark mauve, marked with about six lines of a yet deeper shade proceeding from the base. This species first flowered in England in 1840, having been introduced from Manila the previous year. The blossoms usually appear in January and February, and remain in good condition for about a month. Syns. *Rhynchostylis violacea*, *Vanda violacea.*

Botanical Register, 1847, t. 30.

Var. *Harrisonianum* has ivory-white and very fragrant flowers. Imported plants have borne old flower-racemes 2ft. in length, but under cultivation they are only about half as long. This variety was introduced from Pulo Copang, an island in the Chinese Seas, in 1863. Syn. *S. Harrisonianum.*

Botanical Magazine, t. 5433.

CHAPTER LVI.

SCHOMBURGKIA.

There are about twelve species belonging to this genus, all of which are natives of tropical America. They are epiphytal, with erect, stem-like pseudo-bulbs—which in some species are hollow—bearing at the top from one to three leathery leaves. When not in flower some of them closely resemble some species of Cattleya or Lælia. The flower-stems are produced from the apex of the pseudo-bulbs, and are remarkable for the length to which they occasionally grow—in S. tibicinis as much as 8ft. The flowers are showy, with spreading, undulated sepals and petals, and a three-lobed lip, the side lobes of which are more or less incurved. Some of the species are extremely beautiful; notably, the finest form of S. tibicinis.

Culture.—Unfortunately, Schomburgkias do not flower with freedom in cultivation. We should not, therefore, recommend them to the amateur until he has had some practice in the management of more easily-flowered Orchids. They are found to thrive best when grown in pots half-filled with drainage, in a compost of fibrous peat and sphagnum. During the period of most active growth they may be placed in the hottest house, giving them, at that time, abundance of water at the roots. When the pseudo-bulbs attain their full size, the plants should be removed to the intermediate house to ripen off, and the supply of water gradually reduced, finally withholding it altogether. Growing most frequently on the upper branches of trees, fully exposed to the tropical sun, these plants require but little shade. During summer it is convenient to give them a place adjoining the Dendrobiums, and in winter one near the Cattleyas. They may also be grown on large blocks: the preceding method, however, is a preferable one.

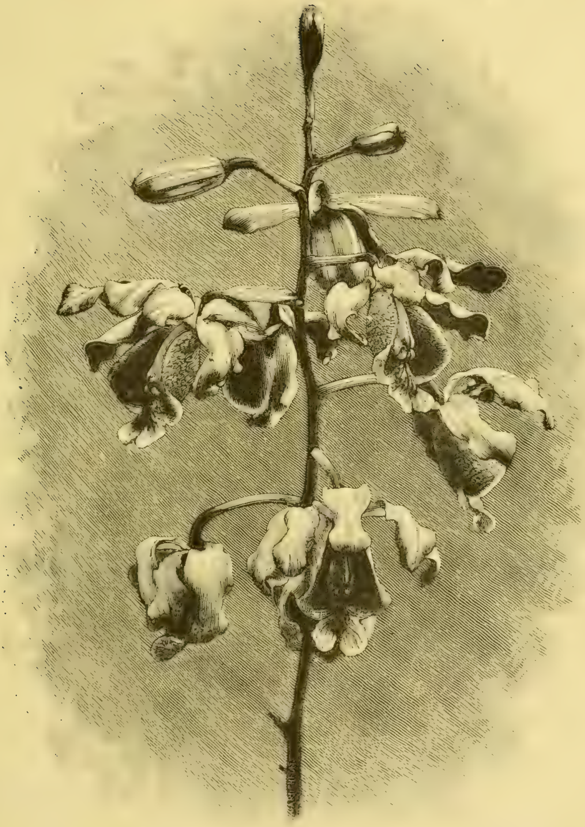
S. Lyonsii.—A handsome, easily-grown, and interesting species. The pseudo-bulbs are fusiform, about 1ft. high, and bear at the top two or three linear-oblong, leathery leaves. The racemes are erect, and bear from twelve to twenty-five flowers, each 2in. across; the sepals and petals are lance-shaped, white, with several rows of purple dots and lines; the lip is recurved at the apex, white, brownish yellow at the margin, the disk having several elevated, longitudinal lines, spotted with purple. This is a native of Jamaica, where it grows on the branches of trees, and on rocks exposed to the full sun. A notable character of the flowers is their habit of self-fertilisation—an unusual occurrence amongst Orchids. The anther-cells open shortly after the expansion of the flower, thereby allowing the first wind to shake out the pollen-masses upon the viscid stigma. Introduced in 1853. The flowers are produced in August.

Botanical Magazine, t. 5172.

S. Thomsoniana.—A recently-introduced species of great promise. The tapering pseudo-bulbs are similar to those of S. tibicinis, but dwarfer. The sepals are strap-shaped, somewhat wavy, light yellow; the petals are pale sulphur-yellow, with purple streaks on the outside; the side lobes of the lip are triangular, rounded, the central one ligulate, notched at the apex, and prettily crisped; the disk is blackish purple, the apex white. Introduced in 1886. The flowers are produced during the summer months. Syn. *Bletia Thomsoniana.*

S. tibicinis.—The largest, the best-known, and probably the handsomest, of the genus. The pseudo-bulbs are 1ft. to 1½ft. long, hollow, tapering from the bottom upwards, their curious structure giving rise to the popular name of "Cow-horn Orchid." In a wild state the plants are usually occupied by swarms of ants. The leaves are two, sometimes three, in number, oblong, leathery, and produced near the top of the pseudo-bulb. The raceme is terminal, 4ft. to 8ft. high, bearing numerous flowers on the upper part; the flowers are 3½in. across, the sepals and narrower petals prettily undulated, narrowly oblong; the outside is pale purple, the inside crimson-purple, reddish brown towards the tips; the side lobes of the lip are orange, streaked with purple, white at the margin, the small middle lobe being white, with purple veins; there is, however, considerable variation in colour and size, the form just described being sometimes distinguished as *grandiflora.* A smaller-flowered variety is in cultivation, with blossoms 2in. in diameter, the side lobes of the lip rosy, and the front lobe a purer white. A native of Honduras; introduced in 1834. The flowers appear in summer. Syn. *Epidendrum tibicinis.*

Plate (for which we are indebted to the Editor of the "Gardeners' Chronicle"); Botanical Magazine, t. 4476.



FLOWERS OF SCHOMBURGKIA TIBICINIS

(½ nat. size).

CHAPTER LVII.

SCUTICARIA.

THE two or three species which constitute this genus are amongst the most interesting and remarkable of all Orchids. Very closely allied in the construction of their flowers to Maxillaria, they are totally distinct in their long, pendent, terete, whip-like leaves, and short, ringed stems. The flowers, which are large and strikingly handsome, occur on short stalks, not more than two or three together; the large sepals and somewhat smaller petals are spreading, the bases of the two lower sepals being united to form a chin. The lip is concave, trilobed, differently coloured to the rest of the flower. The species are natives of tropical South America.

Culture.—Scuticarias are found in a natural state growing upon trees, and they prove most satisfactory under cultivation when treated as epiphytes. They should be fastened on blocks of teak, or, even better, on pieces of soft fern-stem; as they root freely, the blocks should be large. Indeed, for all Orchids grown in this manner, no greater mistake can be made than to use small blocks. Nothing can be gained: the plants require much more attention in watering, and even in spite of this they are very liable to be injured by dryness. S. Hadwenii thrives in an intermediate house: the others should have a place in the stove. We find they are happiest when hung against a moist back wall where they obtain plenty of direct sunlight. During winter little water is necessary: sufficient, however, should be given to prevent shrivelling. In summer the blocks should always be moist: they may be syringed two or three times on sunny days.

S. Hadwenii.—A very handsome and interesting species, with terete, dark green, usually pendent leaves, 1½ft. long, pointed, grooved on one side; they are neither so long nor so flexible as those of the better-known S. Steelii, and may occasionally be seen growing erect. The flowers are produced singly on short scapes, and measure upwards of 4in. at their widest diameter; the sepals and petals are oblong, pointed, greenish yellow, boldly blotched with reddish brown. The lip is 1½in. broad, the sides turned up, and the margin wavy; it is white, blotched with pale rose, contrasting prettily with the rest of the flower. At Kew a healthy example of this plant has for many years been grown in a sunny position in an intermediate house, where it thrives, and flowers regularly. This species deserves a more extended cultivation. It is a native of Brazil, and was introduced in 1851. Syn. *Bifrenaria Hadwenii.*

Botanical Magazine, t. 4629.

Var. *bella* is a beautiful variety, with sepals and petals yellowish outside, bright crimson spotted and blotched with pale sulphur inside; lip white, spotted with light brown on the disk and side lobes, and with mauve on the front lobe.

Var. *pardalina* is a rare and equally beautiful variety, with brown, circular markings on the sepals and petals.

S. Steelii.—Although terete leaves are not unfrequently met with amongst Orchids, in no kind do they attain such a length, or afford such a distinctive character, as in this. They are occasionally 4½ft. long, a little thicker than a goose's quill, flexible, channelled on one side. The flowers are very handsome, and in good varieties measure 4in. in diameter, from one to three occurring on each scape; the sepals and petals are broad-oblong, overlapping, pale yellow, freely blotched with chocolate; the lip is large, three-lobed, creamy white, handsomely striped with brownish purple. A native of British Guiana; introduced in 1834. The flowers are produced at all seasons. Syn. *Maxillaria Steelii.*

Botanical Magazine, t. 3573.

S. Keyseriana is nearly allied to, if not a variety of, S. Steelii. The ground-colour of the sepals and petals is yellow, with well-defined blotches of purplish maroon; the lip is nearly white, with transverse streaks of the same colour. The flowers are larger than in S. Steelii; leaves and general appearance the same.

CHAPTER LVIII.

SOBRALIA.

OWING to the short duration of the individual flowers, which usually fade after being open only one day, this genus has not hitherto been held in much favour. Of the twenty-five to thirty species known to botanists, there is but one —S. macrantha—which has enjoyed extensive cultivation. The marvellous beauty, however, of two comparatively new species—S. leucoxantha and S. xantholeuca—has lately brought the genus into greater prominence.

The habit of Sobralias is very characteristic; they have no pseudo-bulbs, and the stems are slender and reed-like, bearing plaited and slightly coriaceous leaves. S. dichotoma—a Peruvian species not known in cultivation—is said to have stems 12ft. to 20ft. high, forming dense, impenetrable thickets. In the species described they rarely exceed 6ft. in height. The flowers are produced singly from the top of the stem, which continues during the flowering season to produce a close succession of blooms, thus making amends for their transient character. Each flower is large and spreading, varying in colour from the richest purple to yellow and the purest white; the sepals and petals are alike in colour, and nearly so in size and shape; the sides of the lip fold over the column, whilst the front portion is spreading, and undulated or fringed. All the species are natives of tropical America.

Culture.—The subjoined species, when in good health, are most successfully grown in the intermediate house; but newly-imported plants should be placed in a stove for the first year or so until they have become established. Growing freely, and being somewhat gross feeders, they should be given pots large enough to allow the roots free play. The compost should consist of lumps of good, fibrous peat, mixed with a small proportion of lumpy charcoal. As Sobralias require almost unlimited supplies of water during growth, careful drainage is important, a depth of about one-fifth of the pot being necessary. During winter less water is required, but the soil should always be moist. When the growths become crowded, it is advisable to remove a proportion of those that have flowered, thus giving light and freedom to the young ones that are pushing.

S. leucoxantha.—A superb species of recent introduction, and as yet rare in gardens. Its slender stems are 1½ft. to 2ft. high, and produce the blooms at intervals during the summer months. The leaves are plaited, cuneate-oblong, and pointed. The sepals are nearly 3in. long by 1in. broad, pure white, the tips recurved; the petals are also pure white, scarcely so firm in texture as the sepals. The outside of the lip is pure white, as is also the prettily-frilled edge on the inside, but the colour deepens gradually into a rich golden yellow in the throat; the sides are incurved over the column, forming a tube 2in. in length, the apex expanding. A native of Costa Rica; introduced in 1885.

Botanical Magazine, t. 7058.

S. macrantha.—This is the best known, and perhaps the most useful, of Sobralias. The slender, reed-like stems are 4ft. to 7ft. high; the leaves with which the upper part is furnished being deep green, plaited, ovate, and pointed. The flowers are large and showy, frequently measuring 6in. to 7in. across; after the first day they commence to fade. The sepals are oblong; the petals being broader, and crisped at the margin. The base of the lip closes over the column; the front portion is broad, spreading, and wavy round the edge. The whole flower is of a rich purple, with the exception of a spot of pale yellow on the base of the lip. Well-established specimens of this species are rarely out of flower from May to July. It thrives in the coolest part of the intermediate house. At Kew there is a large, healthy plant several feet through, in a house in which the temperature occasionally falls to 45deg. in winter. During the summer, too much water can scarcely be given if the drainage be perfect, and when growth is most active occasional applications of weak manure-water are beneficial. A native of Guatemala and Mexico; introduced in 1842.

Botanical Magazine, t. 4446.

Var. *Kienastiana* has flowers "of the most exquisite purity, surpassing all shades of white I have seen" (Reichenbach). There is a small, sulphur-coloured mark near the base of the lip.

Var. *nana* is much valued, being of dwarf habit, with deep purple and crimson flowers, quite as large as those of the type.

Var. *pallida* has the sepals and petals soft rose, and the lip almost white.

S. sessilis.—A rare and very beautiful species, dwarfer in habit than the majority of Sobralias. Its reed-like stems are from 1ft. to 2ft. in height, and the leaves are broadly lance-shaped, tapering to a long, narrow point, and somewhat hard in texture. One flower only is open on a stem at once, and each lasts but a single day; the stems, however, continue to push forth a succession of flowers, so that during the flowering season a fairly large plant is not long without bloom. The spreading, oblong sepals and petals are pure white, the latter slightly larger and broader. The lip is of a yellowish colour, beautifully tinged with rose-pink; the sides curl upwards, and meet above the column; the front lobe is expanded, and prettily undulated at the margin. Each flower is 2in. across. A native of British Guiana; introduced in 1840. It flowers from October to January.

Botanical Magazine, t. 4570.

S. xantholeuca.—A lovely species, differing but little in general appearance from S. macrantha, except that, so far as can at present be judged, it does not grow so tall. The sepals and petals are narrowly oblong, and of a pale lemon-yellow, the large, frilled lip being of a deeper shade. This species was introduced about 1881, and it still remains extremely rare. It appears to possess the free-flowering character of S. sessilis. Its precise native locality has not been divulged.

Garden, xxii., p. 366.

CHAPTER LIX.

SOPHRONITIS.

THIS genus was founded by Dr. Lindley upon S. cernua, which was introduced from Rio Janeiro in 1826. The small size and neat habit of that species suggested the generic name, *sophron*, a Greek word, signifying modest or unassuming. Although applicable to the first-discovered species, the title seems somewhat out of place when applied to a plant so brilliant and attractive as S. grandiflora. Only three species are known, all of which are natives of Brazil. They are small, compact plants, the pseudo-bulbs clustered on the rhizome, and each bearing a solitary leaf. The scape springs from the base of the matured pseudo-bulb, and is usually one-flowered. Well-managed plants flower profusely. The two lower sepals are united at the base, and the lip is erect and three-lobed; the column is short and thick, winged; and there are eight pollinia, in two cells. The genus is very closely related to Cattleya.

Culture.—These plants recommend themselves especially to those who possess only limited room for the cultivation of tender subjects. In a cool Orchid-house their culture is of the simplest possible nature, as they only require to be planted in small, shallow pans, or fastened upon blocks of wood, with a little sphagnum moss and peat fibre for the roots to creep through, and to be kept moderately moist. They do not require to be dried off or to be subjected to extremes of any kind. When making new growth, they should be kept constantly moist at the roots. The flowering season is from November to March.

S. cernua.—This species is even more close and compact in its habit of growth than the preceding. The pseudo-bulbs are ½in. long, and bear each a single, somewhat broadly ovate, dark green leaf, about 1in. long. Four to eight flowers are produced on a short peduncle; they are individually smaller than those of S. grandiflora, and they are of a rich, bright scarlet, with a yellow lip. They are produced in mid-winter, lasting in full perfection for a considerable period. Introduced from Rio Janeiro in 1826. Botanical Magazine, t. 3677.

S. grandiflora.—This is the finest of the three species, producing its brilliantly-coloured blossoms during the whole of the winter months. The pseudo-bulb is terete, or sometimes egg-shaped, 1in. or more long. The leaves are oblong, 2in. to 3in. long, leathery, deep green, the whole plant seldom exceeding 3in. or 4in. in height. The flowers are produced singly from the apex of the pseudo-bulbs, and measure from 1½in. to 4in. across; they are thick in texture, with broad, brilliant scarlet sepals and petals; the lip is narrow, folding at the sides, orange-yellow, streaked with scarlet. When cut and placed in water, the flowers keep fresh for a week or more; whilst if left upon the plants and kept from drip or sprinklings from the syringe, they continue in full beauty for many weeks. This species was introduced, in 1837, from the Organ Mountains of Brazil, where it grows upon trees at an elevation where white frost occurs in the mornings. Syn. *S. militaris.*

Fig. 106 (for which we are indebted to the Editor of the "Garden"); Botanical Magazine, t. 3709.

Var. *purpurea* has pseudo-bulbs and leaves shorter than in the type, and flowers of a bright carmine-purple.

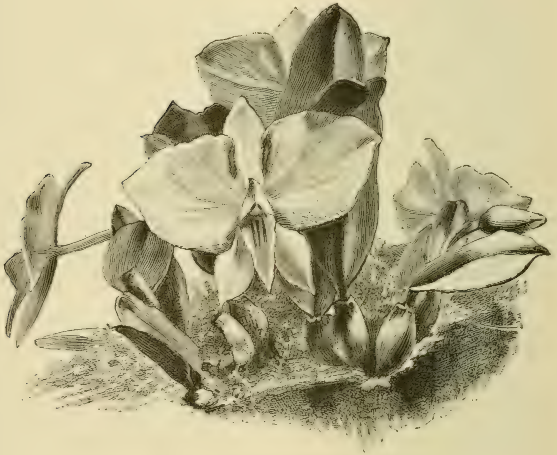


Fig. 106. Sophronitis grandiflora
(nat. size).

S. violacea.—One of the smallest of garden Orchids. It is a perfect gem in its way, possessing a beauty peculiarly its own. The pseudo-bulbs are 1in. long, pointed at both ends, and fluted. The leaves are narrow, 2in. long, and the peduncles are usually one-flowered. Flowers 1in. across, violet-magenta, with a paler eye. They are produced in winter. The plant is a native of the Organ Mountains, whence it was introduced in 1840.

Botanical Magazine, t. 6880.

CHAPTER LX.

SPATHOGLOTTIS.

THIS genus is distributed over a large area, stretching from Northern India and China, through the East Indies and the Malayan Archipelago, as far as the New Caledonian Islands. Over a dozen species have been introduced, and it is probable that many kinds have yet to be discovered. The pseudo-bulbs are usually, but not always, underground; the leaves are long and narrow, several species having only one or two on each growth; the flower-spikes are erect, and bear the flowers towards the top; the sepals and petals are spreading, and the lip is distinctly three-lobed.

Culture.—Owing to the different latitudes and elevations at which the various species of Spathoglottis are found, their treatment varies somewhat as to temperature. S. Fortunei we find to thrive in a cool or intermediate house, whilst S. aurea and S. Vieillardii require a strong, moist heat when growing. In other respects, however, the treatment is similar. Pots or broad pans should be used, and a compost of fibrous loam and peat, with a little leaf-soil and fine potsherds added, is most suitable. Being truly terrestrial Orchids, the surface of the soil should be slightly below the rim of the pot. The plants enjoy a good supply of water when active, but when growth is completed this should gradually cease until scarcely any is given.

S. aurea.—A fine species, with plaited, narrowly lance-shaped, pointed leaves 3ft. long by 1½in. broad. The flowers are about 3in. across, with oval-oblong, bright yellow sepals and petals, the former being marked with a few brown lines and dots near the base. The lip is small, yellow, sparsely spotted with purple-brown; the side lobes are erect, rounded, and the central lobe, which is very variable in shape, may be (according to Reichenbach) "narrow and acute, or broad, simply retuse, or three-toothed"; it has a triangular secondary lobe on each side near the base. This species is a native of Mount Ophir; it was introduced originally by Messrs. Veitch and Sons about 1850, and again in 1886 by Messrs. Sander and Co. Syn. *S. Kimballiana.*

Gardeners' Chronicle, July 28, 1888.

S. Fortunei.—A pretty-flowered, deciduous species, with somewhat scanty foliage, found on the granite mountains of Hong-Kong. The pseudo-bulbs are flat and tuber-like. The pale green leaves are 1ft. long, narrowly lance-shaped, thin and plaited. The flower-scapes are slightly pubescent, erect, 1ft. high, bearing six to eight flowers; sepals and the slightly broader petals ovate, bright yellow; lip conspicuously three-lobed, the side lobes erect, with chocolate-coloured tips, the front lobe wedge-shaped and notched at the apex. The flowers measure 1½in. across. This species should be grown in pans of sandy loam and leaf-soil, and may remain in the cool house at all seasons: a little extra heat, however, is beneficial at the commencement of the growing season. Fairly abundant supplies of water are needed during growth, but after the foliage has disappeared the soil should be kept quite dry. The flowers appear in September and October. Introduced in 1845. Syn. *Pachystoma Fortunei.*

Botanical Register, 1845, t. 19.

S. Vieillardii.—This is the largest and showiest of the species introduced. The handsome leaves are 2ft. long by 2in. to 3in. broad, acuminate, and plaited. The scape springs from the base of the pseudo-bulb, and attains a height of 2ft. to 3ft. Several scores of flowers are produced on the spike, but not more than ten or a dozen are open simultaneously; the flowering season lasts for three months. The blooms are 2in. in diameter; the broad, ovate sepals and petals are white, or of a pale lilac. The lip is three-lobed; the side lobes are small, erect, orange-brown, with two large, orange-coloured protuberances on the disk between them; the projecting front lobe is deep lilac, broadly obcordate, united to the body of the lip by a long, slender stalk. The plants now in cultivation were imported from the Sunda Archipelago, where they were discovered in 1886. The species had previously been detected as far back as 1853, in the distant New Caledonian Islands. It requires moist stove treatment when growing, with a decided period of rest afterwards. It flowers from September onwards. Syn. *S. Augustorum.*

Botanical Magazine, t. 7013.

CHAPTER LXI.

STANHOPEA.

THIS genus comprises about twenty species, most of which have been in cultivation at some time or other. They are characterised by fleshy, egg-shaped pseudo-bulbs, clustered on a very short rhizome, and which become furrowed or wrinkled with age. Each pseudo-bulb is surrounded by a layer of loose, fibrous, brown sheaths, and is surmounted by a single, stalked, leathery, plaited, stout, green leaf. The scape springs from the base of the matured pseudo-bulb, and is invariably pendulous; it varies in length and in the number of its flowers, and is clothed with conspicuous, boat-shaped bracts, which are largest about the flower-stalks. The flowers are large, often bright-coloured and spotted; the sepals are large, broad, and spreading; the petals are similar but narrower, and usually thinner in texture. The lip is large, fleshy or wax-like in texture, and very remarkable in structure; the basal portion (hypochil) is globose or boat-shaped, and hollow; the intermediate portion (mesochil) varies in size and form, and nearly always terminates in a pair of stiff, horn-like lobes; the apex or front lobe (epichil) is more like what is termed the lip in Orchids generally. The column is large and conspicuous, and is usually flattened or winged. The species described are found only in South and Central

America and Mexico. The genus is related to Acineta, Catasetum, and Coryanthes, and, like them, it is remarkalbe, even among Orchids, for the highly-specialised character of the labellum of the flower. If we are struck by the singular modification of form in that part of the flower which is really a petal though called a lip, in such genera as Cattleya, Odontoglossum, and Phalænopsis, how much more may one wonder at Nature's provision to insure cross-fertilisation in the flowers of the genera above named and Stanhopea! It would be impossible to find anything more remarkable in the whole order of Orchids than the lip of S. eburnea or that of S. platyceras.

The flowers are developed irregularly, according to the treatment and growth of the plant; as a rule, however, the species bloom in autumn. The only drawback Stanhopeas have, as garden plants, is the early fading of their flowers, which rarely last a week, even under the most favourable conditions. But they are wonderful objects when at their best, and they are almost overpoweringly fragrant; whilst the plants are so easy to manage, and so rarely fail to bloom, that they well deserve to be ranked with first-class garden Orchids.

Culture.—All the species should be grown in a stove temperature. They are best planted in teak baskets, sufficiently large to afford space for a good layer of compost, consisting of one part peat-fibre and two parts sphagnum, with a few pieces of charcoal. The bottom of the basket must, of course, be open, and a few long, narrow pieces of charcoal should be laid, about 1in. apart, across the bottom. This is sufficient to keep the compost from washing away, whilst it permits the flower-spikes to come through the bottom of the basket. Some cultivators use nothing but sphagnum for Stanhopeas, and grow them well; but we prefer to add a little good peat-fibre and charcoal, as it keeps the moss fresh and open. During summer, when growth is most active, these plants require abundance of moisture, both at the root and on the leaves. In hot weather they should be well watered daily. In winter they require less moisture; in fact, if suspended in a house where the atmosphere is kept moist, they do not require any attention in winter as regards water. Naturally they grow upon trees, and we sometimes see newly-imported plants attached to pieces of branches, which they have enveloped with a thick layer of roots; but it is not advisable to attempt to grow Stanhopeas on blocks of wood. Whilst in flower the plants should be placed in a cool or greenhouse temperature.

The species here described are the best and the easiest to procure.

S. Bucephalus.—A handsome-flowered, easily-grown plant, and one of the best known of all Stanhopeas. It belongs to the same group as S. oculata and S. Wardii, differing from them chiefly in the form of the lip. Its pseudo-bulbs are dark green, ridged and wrinkled when old, and the leathery, dark green leaves have petioles 3in. long and a blade 9in. by 4in. The pendulous spike is about 8in. long, four- to six-flowered. Each flower is 4in. across. The sepals and petals are reflexed, the former broad, the latter wavy, their colour rich tawny yellow, marked with large, crimson spots. The column is 2in. long, green and white, spotted with purple. The lip has a curved, boat-shaped cavity, two projecting, curved horns, and a broad, fleshy mid-lobe, the apex of which is claw-like; the colour is similar to that of the sepals and petals. The fragrance of the flowers is overpowering when in a small house.

This species was introduced from Peru in 1852; it is also a native of Mexico. It flowers in August. Syns. *S. grandiflora* (Reichenbach), *S. Jenischiana*.

Botanical Magazine, t. 5278.

S. Devoniensis.—A handsome species, the flowers being large, leopard-spotted, and of deep, soft colours. Pseudobulbs fig-shaped, furrowed. Leaves plaited, stout, 9in. to 12in. long. The pendulous scape bears two or three flowers, and is clothed at the base with greenish, scale-like bracts. Each flower is 5in. across. The broad sepals are spreading, and coloured orange, with broad, reddish-brown blotches. The petals are narrow, wavy, and coloured like the sepals. The lip is very fleshy; the lower half is nearly globose, with thick, dilated margins extended on each side into a pair of long, incurved, pointed horns; the apical portion is ovate, channelled, and three-toothed at the tip. The column is large, thick, plano-convex, and not winged. The colour of the column and lip is white, stained with purple. This species is closely related to S. tigrina. Its name commemorates the late Duke of Devonshire, in whose famous collection of Orchids at Chatsworth this and other species of Stanhopea were first cultivated with success by Sir Joseph Paxton. The present species flowered there in 1837. It is a native of Peru. Syn. *S. maculosa*.

Bateman's Orchids of Mexico and Guatemala, t. 15.

S. eburnea.—A beautiful-flowered species in its best form, and one which is easily distinguished from the rest of the cultivated Stanhopeas by its white, wavy-looking flowers and the peculiar formation of the lip. The pseudo-bulbs are conical, 1½in. long. The leaves are leathery, 8in. to 12in. long by about 4in. wide. The scapes are pendulous, with small bracts, and they bear two or three flowers, which are 5in. across. The sepals are broad, the petals narrow, both being reflexed and shining, waxy white. The lip is 3in. long, solid and fleshy except at the base, where there is a short cavity with a pair of hook-like horns over the mouth; the apex of the lip is heart-shaped, and, except a few blotches of purple on the upper part of the lip, it is white, like the sepals; the column is 3in. long, narrow, conspicuously winged near the top. This species is common in British Guiana, and is frequently met with in English collections. Syn. *S. grandiflora* (Lindley).

Botanical Magazine, t. 3359.

S. ecornuta.—Although rare in gardens, this species deserves mention here because of the exceptional form of its flowers. The pseudo-bulbs and leaves are large, deep green, and very like those of S. eburnea. The scape is short, enveloped in short, green, boat-shaped, overlapping bracts, and is two-flowered. The sepals, which all point upwards, are ear-like, 2in. long, half as wide, concave, rather fleshy, and creamy white. The petals are similar to the sepals, but smaller. The lip is so remarkable in form that the species was at first supposed to be a monstrosity of some kind, and subsequently a new genus, *Stanhopeastrum*, was founded upon it by Reichenbach. The terminal lobe and horns, characteristic of the genus, are in this species entirely absent, the lip being simply a fleshy, tuberculated sac, about 1½in. long and 1in. wide, and the narrow aperture is partly covered by the short, fleshy column. The colour of both column and lip is bright yellow, deepening to dark orange at the base. The species was introduced from Central America in 1846.

Botanical Magazine, t. 4885.

S. florida.—This species was introduced about ten years ago, and first flowered with Sir Trevor Lawrence, who procured it at an auction sale. Its habitat is not at present known. It belongs to the section represented by S. insignis. The flowers are produced on a stout, pendulous scape, strong plants bearing as many as seven flowers on a single scape. Each flower is 5in. across. The sepals are 3in. by 1½in., white, with small, purple dots. The petals are smaller, and coloured like the sepals. The lip has a thick, fleshy, sac-like base, and is whitish, thickly spotted with purple, with a large, eye-like blotch on each side at the base.

Gardeners' Chronicle, Oct., 1881, p. 565, fig. 108.

S. insignis.—A very handsome species, related to S. Bucephalus. Pseudo-bulb ovate and ribbed; leaf stout, leathery, with a short petiole and a blade 1ft. long by 4in. wide. Scape about 6in. long, covered with dark brown sheaths, two- to four- flowered. Flowers 5in. across; sepals broad, concave, spreading, dull yellow, spotted with purple; petals narrow, wavy, thin, coloured like the sepals; base of the lip short and globose, thick and wax-like, 1in. deep, with a broad margin, the colour a dull white, with numerous spots of bright purple, wholly purple inside the cavity; horns 1in. long, curved upwards and forwards; mid-lobe heart-shaped, channelled, and narrowed to a point. This species was the first to flower under cultivation, and the genus Stanhopea was founded upon it by Sir William Hooker, in compliment to Earl Stanhope, then President of the Medico-Botanical Society of London. It was introduced from South America to Kew, and flowered there in 1827. Plants of it flowered at Kew last year (1889).

Fig. 107; Botanical Magazine, t. 2948.

S. Martiana.—A distinct and beautiful-flowered species, not uncommon in cultivation. It is closely related to

S. tigrina, differing chiefly in the size and colour of its flowers; these are 4½in. across. The sepals and petals are

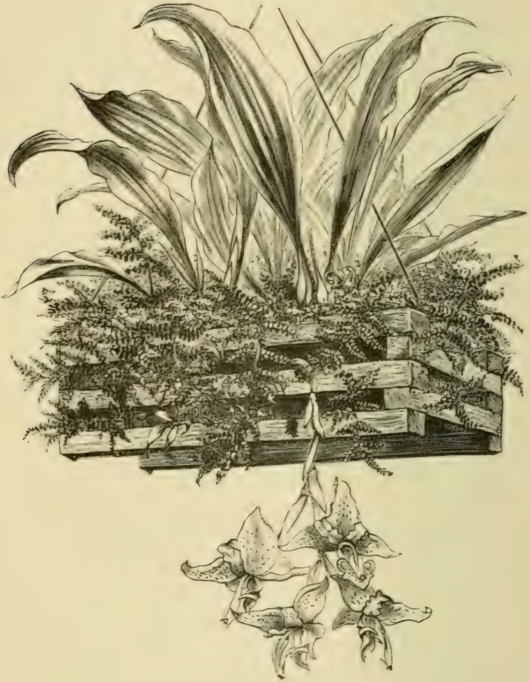


Fig. 107. Stanhopea insignis
(much reduced).

broad, concave, spreading; sepals creamy white, with a few purple spots about the base; petals transparent white, marked with large blotches of purplish crimson. The lip, which is white, has a short, chin-like base and cavity, a pair of broad, taper-pointed horns, and a long, projecting central lobe, with a claw-like tip. The column is 2in. long, club-shaped, not winged, white, with crimson spots. This species is a native of South Mexico, whence it was introduced in 1827. Syn. *S. velata.*

Bateman's Orchids of Mexico and Guatemala, t. 27.

Var. *bicolor* differs from the type in having the ground-colour of the sepals pure white.

S. oculata.—A well-known species, showing considerable variation in the markings of its large flowers. The pseudo-bulb is egg-shaped, 2in. long, and furrowed. The leaf has a stout petiole 3in. long, and an ovate blade 1ft. long by 4in. wide. The flower-spike is pendulous, 1ft. long, clothed with boat-shaped, scarious, pale brown sheaths, and bearing three to six flowers ; these are 5in. across. The sepals are 3in. long, 1in. broad, reflexed, pale yellow, thickly spotted with purple. The petals are half as large as the sepals, and coloured the same, except that the spots are fewer and larger. The lip is long, narrow, fleshy, the hollowed portion 1in. long, white, with crimson blotches, the front lobe tongue-shaped, with a curved, horn-like lobe on each side, the colour being white, with purple dots. The column is at least 2in. long, narrow in the lower half, winged above, and coloured green, with purple dots. This handsome species was introduced from Mexico about fifty years ago. Syns. *S. guttulata, S. Lindleyi, S. Schmidtii.*

Botanical Magazine, t. 5300.

S. platyceras.—This is the largest-flowered, one of the richest-coloured, and the most remarkable in form, of all Stanhopeas. Our description is taken from a plant which flowered recently at Kew: Pseudo-bulbs and leaves as in S. Bucephalus, but stouter. Scape pendulous, short, one-flowered. Flower 7in. across; sepals 3½in. long and 2¼in. broad, wide-spreading, pale yellow or nankeen-coloured, with numerous ring-shaped blotches and spots of rose-purple; petals narrower and shorter, but coloured the same as the sepals; basal part or hypochil of the lip boat-shaped, 2½in. long, 1in. deep, and nearly 1in. across; the horns 1in. long, broad, and pointing forwards parallel with the tongue-shaped front lobe; the colour of the boat-shaped portion deep purplish crimson inside, paler outside, with spots of a deeper colour; the horns and front lobe coloured like the sepals; column 3in. long, winged near the top, greenish, with red spots. It is difficult to convey any idea of the extraordinary form and rich colouring of the flowers of this species. Sometimes the scape is two-flowered. Introduced from New Granada by Messrs. Low and Co., and first flowered by Mr. Day in 1868.

Garden, t. 652.

S. tigrina.—This is one of the most striking of all Orchids; its huge, strangely-formed blossoms, the thick, waxy consistence of the lip and column, the singular colours of the flowers, and the powerful fragrance they exhale, being a combination of characters of a very extraordinary nature. The pseudo-bulbs and leaves are dark green, the latter being broad and about 9in. long. The pendulous scape is clothed with large, boat-shaped, thin, brown bracts, which remain after the flowers have opened. The waxy, fragrant flowers are fully 6in. across. The sepals are almost as broad as long, concave; and the petals are much narrower and wavy—the colour of both being dingy yellow, with large blotches of dull purple, sometimes a single irregular blotch extending over two-thirds of the entire sepal. The cavity of the lip is broad and short; the horns are about 1in. in length, and are suddenly bent forward at right angles; the mid-lobe is over 1in. wide, and is divided at the apex into three fleshy teeth. The column is 3in. long, 1in. wide, narrowed at the base. The colour of the column and lip is pale dull yellow, with numerous spots of purple. This species was introduced from Mexico, in 1839 (?), by Messrs. Low and Co.

Botanical Magazine, t. 4197.

S. Wardii.—This beautiful, fragrant, and free-flowering species favours S. oculata somewhat in form and markings, but is much brighter in colour, varying from bright yellow to a deep golden orange, and spotted with crimson. The pseudo-bulbs are egg-shaped, 2in. long. The leaves are large, broad, and leathery. The scape is 9in. long, and it bears from three to nine large flowers; these are 4in. across. The sepals, petals, and lip, are similar in form to those of S. oculata. The most striking feature in the flowers of S. Wardii is the colour of the cavity at the base of the lip, which is almost wholly deep velvety purple, with a satiny sheen. The flowers are usually produced in August, their fragrance being very powerful. This species was introduced from Guatemala in 1836. Syns. *S. amœna*, *S. aurea*, *S. Barkeri*, *S. graveolens*.

Botanical Magazine, t. 5289.

CHAPTER LXII.

STENOGLOTTIS.

ONE South African species constitutes this genus. It is terrestrial, its nearest ally being Habenaria—a genus little known in cultivation outside botanic gardens. The species was introduced in 1871.

Culture.—In its natural state, S. fimbriata is found in moist, shaded situations, often on rocks, to which it clings by means of its thick, fleshy, white roots, and forms a turf-like mass. Under cultivation, it succeeds when potted in a compost of light loam, silver sand, and leaf-soil. A surfacing of live sphagnum is beneficial to the plants, and improves their appearance. Placed in the warmest part of the Odontoglossum-house, and kept fairly moist at all times, this little Orchid thrives admirably. It loses its foliage in winter, when it should be allowed to rest by withholding water, though it must not be allowed to get quite dry.

S. fimbriata.—Both the foliage and the flowers of this little species are pretty and attractive. The leaves spread horizontally near the surface of the soil, forming a rosette 6in. in diameter; they are narrowly oblong, undulated at the margin, and of a deep green, prettily marked with longitudinal bands of black-purple spots. The spike is erect, usually 6in. to 12in. high, bearing a great number of small, pale rosy-purple flowers, each $\frac{1}{3}$in. across. The lip is spreading, trilobed at the apex, and is marked with a few purple spots. There is considerable variation in this species. Usually the spots on the leaves are numerous and well-defined; in some forms they are faint, and in others are entirely absent. A variety is in cultivation at Kew with unspotted leaves three or four times the ordinary size, and a strong flower-spike $1\frac{1}{2}$ft. high. The blossoms are produced in autumn.

Botanical Magazine, t. 5872.

CHAPTER LXIII.

THUNIA.

THIS genus is nearly allied to Phaius, and in the "Genera Plantarum" is included under that genus. It differs so much, however, from Phaius proper in stem, leaf, and inflorescence, and is now so generally known under the above title, that we prefer to retain it as a good garden genus, thereby following the classification of the late Professor Reichenbach. There are probably only two species introduced, although specific names have been given to what are simply varieties of these. The stems are erect, terete, rather herbaceous, of only annual duration, the old stem perishing as the new one develops; they are clothed with leaves to the base, these falling away in autumn. The flowers are produced from the apex of the young leafy stem in large, drooping clusters; their structure is very like that of Phaius, the sepals and petals being arranged above the plane of the lip, the sides of the latter inclosing the column, whilst the front portion is expanded. The species are natives of India, Burmah, &c., where they appear to be very abundant.

Culture.—Even the smallest collection should include a few plants of this genus, for no Orchids of equal beauty are more easily grown and propagated. Although they are said to be epiphytal when wild, they thrive best in cultivation when treated as terrestrial plants. Pots at least one-third filled with drainage should be used, and a compost consisting of fibrous peat, loam, and sphagnum, with a sprinkling of silver sand. By using pots 8in. in diameter, three or four stems may be planted together. The soil in the centre should be higher than than at the rim. The proper time for repotting is as soon in spring as the young growths begin to push from the base of the old stems; all the old soil must then be shaken off, and only sufficient roots to fix the plants firmly should be allowed to remain. If a mild bottom heat is available, it is an advantage in the early stages of growth; but as soon as the shoots are 6in. to 8in. high the plants should be removed to the intermediate house. When at rest, a dry position in a cool house is best for them. In full growth liberal supplies of water must be given, but after the flowering season is over and the leaves begin to decay, this should be gradually reduced, and for about three months in mid-winter none at all is needed. It is important that the plants should not be neglected—as is apt to be the case—when the leaves are falling; at that time they should have all the light and air possible. It is on the proper care at this season that the quantity and quality of the next year's bloom depend.

In a batch of Thunias, a good proportion of the stems will each produce two or more young growths. This is the best means of increasing the stock, and is sufficient to meet the requirements of ordinary gardens. If a large number are required, they may be obtained by cutting the old stems into lengths of about 6in., inserting these in pots of sand, keeping them close until young growths appear; when the latter begin to emit roots, they may, with the old piece of stem attached, be potted and treated in the usual way. They will take at least two years to grow to flowering strength.

T. alba.—This is a free-growing species, with terete tapering stems 2ft. to 3ft. high, clothed with pale green leaves, which are narrowly oblong, pointed, about 6in. long, and glaucous underneath. The flowers are borne in a pendulous cluster at the apex of the stem, a dozen or more together; each is from 3in. to 4in. in diameter when fully expanded; they are frequently, however, kept half-closed by the large, boat-shaped bract at the base, but this can be remedied by carefully slitting the bract with a sharp knife. The sepals and petals are white, oblong-lanceolate. The sides of the lip inclose the column; the central part is expanded, wavy at the margin, the white ground being faintly marked with pale purple. Introduced from Nepal about 1841; it is also found in Burmah. The flowers are produced in June. Syn. *Phaius albus.*

Botanical Magazine, t. 3991.

T. Bensoniæ.—A very elegant and beautiful species, similar to T. alba in general appearance. The stems are 2ft. to 3ft. high. The leaves are pale green on the upper surface, glaucous beneath. The drooping flowers are produced on short, terminal racemes of about ten to twelve; each bloom is between 4in. and 5in. across. The sepals and petals are alike, spreading, narrowly oblong, bright red-purple, of varying depth of shade, but always paler towards the base. The lip is trilobed, rich magenta-purple on the front lobe, which is broadly oblong, frilled, unevenly lobed, and toothed at the margin; the side lobes meet over the column. Introduced from Rangoon in 1867. It flowers in July. Syn. *Phaius Bensoniæ.*

Botanical Magazine, t. 5694.

T. Marshalliæ.—There are few Orchids at once more beautiful and useful than this. It is easily grown, and flowers abundantly. It is considered by some botanists to be a variety of T. alba, from which it does not differ in habit, although it is much superior in its flowers. The flowers are 5in. in diameter, and pure white, excepting the front of the lip, which is of a rich golden yellow, veined with deep orange-red. The sepals and petals are pointed, spreading, and broadly lance-shaped; the base of the lip surrounding the column, the front expanded, prettily frilled at the edge. A native of Moulmein. Syn. *Phaius Marshalliæ.*

Williams' Orchid Album, t. 130.

T. Veitchiana is a hybrid between T. Bensoniæ and T. Marshalliæ. The sepals and petals are very pale mauve. The base of the lip is orange-purple, and the front mauve-purple. A rare and beautiful plant.

CHAPTER LXIV.

TRICHOPILIA.

THIS genus embraces a dozen or so good species, about half of which are known in gardens. They are related to the Oncidiums and Brassias, but are distinguished by their two pollen-masses at the end of a long, wedge-shaped caudicle, their large, convolute lip, and the remarkable hood of the column, which is divided into three unequal lobes. The pseudo-bulbs are crowded, usually much flattened, some of them being scarcely thicker than the leaves; as a rule, they are smooth and dark green in colour. The leaves are large and leathery, solitary on the apices of the pseudo-bulbs, and they remain on the plant about four years. The large, conspicuous flowers are abundantly produced on short, stout basal peduncles, rarely more than three flowers being borne on each. All the species blossom freely when in good health. The flowers last well both when left on the plant and when cut and placed in water. The species inhabit the country from Mexico to Colombia and the West Indies.

Culture.—The kinds here described may all be grown in a warm greenhouse, or along with the general collection of Cattleyas. They keep alive and flower now and again when treated as cool-house plants, but they never grow and make a good display of bloom unless they get a fair quantity of heat in summer. They like light too, and should therefore be shaded only from the brightest summer sunshine. They should be grown in pots or baskets, in a mixture of peat and sphagnum, and as they require plenty of water when growing, the drainage should be ample and perfect. A position close to the roof-glass is the best for them. The most favourable time for re-potting Trichopilias is after the flowers are over and new growth has commenced. During winter, the soil about the roots should be kept moist, but not saturated. If any species may be said to thrive under cool-house treatment, it is T. fragrans. The plants are all easy to procure from the nurseryman, being abundant where they are wild, easy to import, and easy to establish and keep in health in this country.

T. crispa.—A beautiful, free-flowering species, of apparently variable colour. Pseudo-bulbs ovate, flattened, 2in. to 3in. long, dark green, one-leaved. Leaves leathery, 6in. by 2in., keeled, acute-pointed. Flower-spikes basal, drooping, short, three-flowered; flowers with pedicels 2in. long; sepals and petals spreading, 2½in. long, ½in. wide, wavy-edged, twisted, brownish yellow; lip folded over the column, spreading in front, 1½in. across, coloured deep crimson, with a white margin. The flowers are developed in May or June, and sometimes again in the autumn; they remain fresh about a month. All the forms in cultivation are handsome, and well worth growing. The best of them is the variety known as *marginata*, sometimes considered a distinct species. It has bright carmine sepals and petals, and a large, crimson lip with a narrow marginal band of white. In other varieties the colour is paler, or the lip is crimson only on the inside of the tube, the spreading portion being white. This species is a native of Costa

Rica, and was introduced in 1849. Syns. *T. coccinea, T. marginata.*

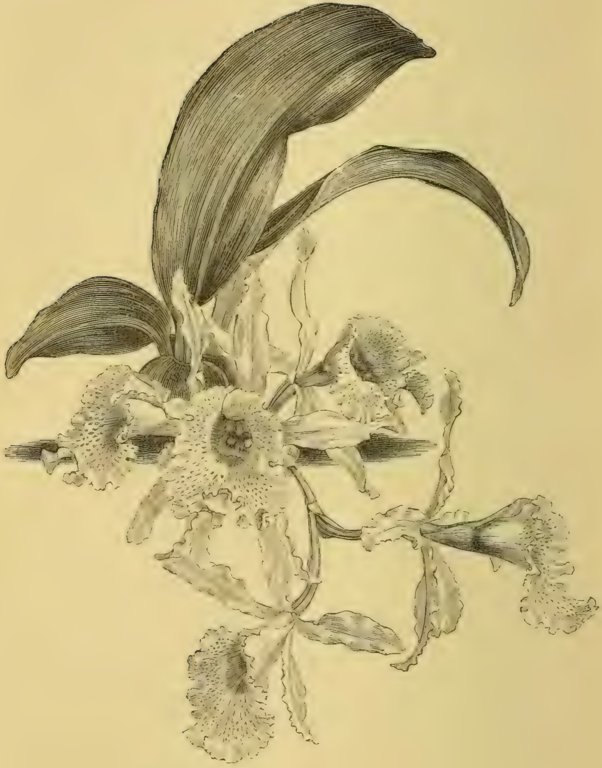
Botanical Magazine, t. 4857; Paxton's Flower Garden, t. 63.

T. fragrans.—An elegant, large-flowered, very fragrant Orchid, and one of the easiest to cultivate. Its clustered pseudo-bulbs are oblong, 3in. to 5in. by 1in., much flattened, smooth, dull green, one-leaved. Leaves leathery, 9in. long, 2in. wide, acute-pointed. Flower-spikes springing from the base of the matured bulb, 9in. to 12in. long, about six-flowered; flowers nodding, on pedicels 3in. long; sepals narrow, 2½in. long, wavy and twisted, usually greenish white; lip folded at the base, the front spreading, 1½in. across, more or less lobed, pure white, with a blotch of yellow in the throat. This plant thrives when grown in a cool house. It should be planted in a pot, in peat and sphagnum, and be kept moist all the year round. The odour of the flowers is almond-like; they are developed in summer, and they remain fresh about a month. Native of New Granada; introduced in 1856. Syns. *T. Lehmanni, Pilumna fragrans.*

Botanical Magazine, t. 5035.

Var. *nobilis.*—Pseudo-bulbs larger and stouter. Leaves shorter and broader. Sepals and petals white, 2in. long, scarcely twisted; lip larger than in the type. This is a much finer Orchid than the ordinary T. fragrans. Syn. *Pilumna nobilis.*

T. Galeottiana.—This is not one of the best of the cultivated Trichopilias, but it is worth growing on account of the distinct colour, size, and number of its flowers. The pseudo-bulbs are about 5in. long by 1in. wide, flattened, smooth, one-leaved. Leaves leathery, tapering at both ends, with a prominent keel, the largest being 6in. long



TRICHOPILIA SUAVIS

(½ nat. size).

by 2in. broad. The flower-spikes are short, decumbent, produced from the base of the pseudo-bulbs, and each bears one or two flowers 3in. across. The sepals and petals are 2in. long, ½in. wide, tapering, not twisted, greenish yellow; the lip is folded at the base, the front lobe spreading, 1½in. across, notched, white, with a yellow throat and a few blotches of crimson. This species varies somewhat in the size and tinting of its flowers. It was introduced from Mexico in 1859. Syn. *T. picta* (Illustration Horticole, 1859, t. 225; sepals and petals figured brown, with pale margins).

Botanical Magazine, t. 5550 (as *T. Turialvæ*).

T, lepida.—A handsome, large-flowered species, of rather unusual colour. Pseudo-bulbs 3in. to 4in. long, 1in. wide, very flat, smooth, partly inclosed in thin, brown sheaths, one-leaved. Leaves leathery, about 9in. long by 2in. broad, keeled, acute-pointed. Flower-spikes springing from the base of the matured growth, drooping, 6in. long, usually three-flowered; flowers on flexuous pedicels, and each fully 6in. across; sepals and petals spreading, narrow, wavy, not twisted, rosy purple, white along the margins; lip trumpet-shaped, the front lobe spreading, 1½in. across, crisped and wavy, almost crimson inside, becoming paler towards the margin, which is white. This species blossoms in April or May, and keeps fresh for about three weeks. There is very little difference between this and several other so-called species. Except in colour this plant closely resembles T. crispa.

Floral Magazine, 1874, t. 98.

T. suavis.—A large-flowered, fragrant species, easily grown, and a popular garden plant. It has broad, thin pseudo-bulbs 2in. long, each bearing a large, dark green, leathery leaf 8in. long by 3in. wide, and keeled. The peduncles are produced from the base of the last-matured pseudo-bulbs, and they are short, decumbent, usually three-

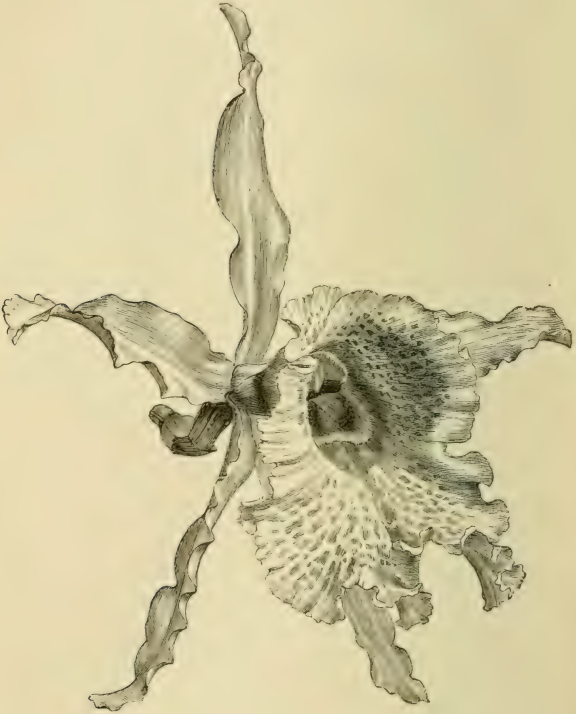


Fig. 108. Flower of Trichopilia suavis
(nat. size).

flowered, each flower having a long, flexuose stalk. The sepals and petals are narrow, wavy, 2in. long, nearly straight. The lip is large, three-lobed, the side lobes folded over the column, and forming a tube, the front lobe spreading, 2in. across, crisped and wavy at the edge. The colour of all the parts of the flower is nearly white, with spots and stains of red, the inside of the tube being yellow. The odour of the blossoms resembles that of haw-

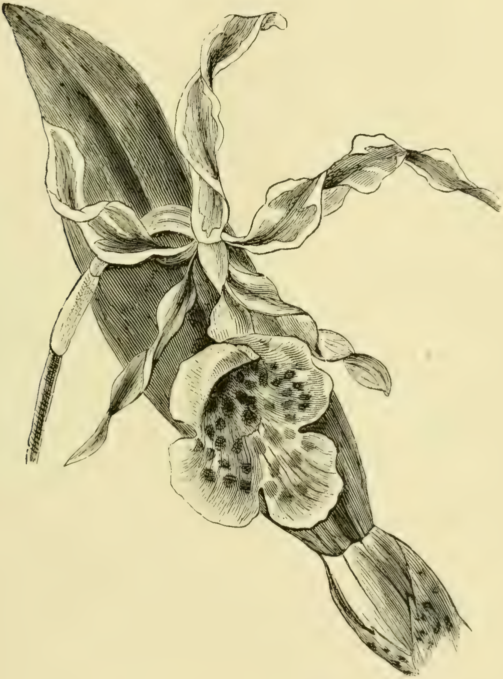


Fig. 109. Flower and Leaf of Trichopilia tortilis
(nat. size).

thorn. They are developed in May or June, lasting about a month. When well managed this species flowers very freely, small plants producing quite a crowded whorl. It is a native of Costa Rica, where it grows on oaks and other trees at an elevation of 5,000ft. to 9,000ft. Introduced in 1848.

Plate; Fig. 108; Botanical Magazine, t. 4654.

T. tortilis.—An old and favourite garden Orchid, being easy to manage, and a free-flowering, ornamental plant. Its pseudo-bulbs are from 2in. to 4in. long, 1in. wide, much flattened, dark green, one-leaved. Leaves leathery, ovate, 6in. long, keeled, dark green. Flowers on decumbent stalks, usually solitary; sepals and petals spreading, narrow, 2in. long, spirally twisted, pointed, their colour brown, with a yellowish border; lip folded, and forming a tube at the base, the upper part broad, spreading, 1½in. across, lobed, white, with crimson spots, almost wholly crimson inside the tube. This species blooms very prolifically, small plants when in vigorous health producing a score or more flowers, which remain fresh about a month. It blossoms in summer, and sometimes again in winter. A native of Mexico; introduced in 1835.

Fig. 109; Botanical Magazine, t. 3739.

CHAPTER LXV.

TRICHOSMA.

THIS monotypic genus is nearly allied to Cœlogyne, from which it chiefly differs in its erect, tufted stems; it has also been included under Eria. The species is an epiphyte, and a native of the Khasya Mountains, whence it was introduced in 1840.

Culture.—This is one of the most easily-cultivated of Orchids. It delights in a cool, moist atmosphere, and may be grown with the Odontoglossums. Imported plants should be kept in the intermediate house until fully established. They should be potted in fibrous peat and sphagnum, and, as copious supplies of water are necessary during growth, perfect drainage is essential. Although less water is needed in winter, the roots must at no time be allowed to remain dry. Provided a vigorous, healthy growth be obtained, this Orchid seldom fails to bloom.

T. suavis.—An extremely pretty, free-flowering plant, which certainly deserves more notice than it has hitherto received. It has slender, tapering stems about 8in. high, surmounted by two bright green, oblong leaves, between which the four- to eight-flowered raceme is produced. The flowers are 1½in. in diameter, and delightfully fragrant. The sepals and petals are lance-shaped, creamy white;

the lip is three-lobed, the side lobes white, striped with brownish crimson, and the middle one crested, yellow, with crimson at the edges. It flowers in October and November. Syns. *Cœlogyne coronaria*, *Eria coronaria*, *E. suavis*.

Botanical Register, 1842, t. 21.

CHAPTER LXVI.

VANDA.

FEW genera possess qualities better calculated to recommend them to the Orchid-grower than this. It includes about thirty species, the majority of which are easy to cultivate, handsome in habit, and very beautiful in bloom. V. suavis and V. tricolor have perhaps the stateliest habit of all Old-World Orchids; and in V. cærulea and V. Sanderiana we have exceptional size and beauty of colour in the flowers. All the species are evergreen and epiphytal; they are distributed over a large area, stretching from the Himalayas, through India to the Malayan Archipelago, one species being found in tropical Australia. The first species to make its appearance in the gardens of this country was V. Roxburghii, which flowered in 1820. The leaves are most frequently strap-shaped, occasionally oblong, and in a few species terete, almost always distichous and of leathery texture, the apices being either bilobed or curiously jagged. The flowers are in few- or many-flowered racemes, which originate at the base of the leaves, either in the axils or on the opposite side of the stem. The sepals and usually similar petals are spreading, often much narrowed towards the base; the lip is continuous with the short, thick column, the front portion expanded, the small side lobes erect, and the base (except in V. Batemanni and

V. gigantea) forming a short spur or sac. The flowers are fragrant, and remain for a long time in beauty. V. Batemanni and V. gigantea are included in the following selection because they are so widely known as Vandas; properly, however, they form a part of the genus *Stauropsis*. *Fieldia* is also a name by which they have been known.

Culture.—Vandas may be grown in either pots, baskets, or cylinders: for the larger species, such as V. Batemanni, V. suavis, V. tricolor, &c., pots are preferable; whilst baskets or cylinders are best for the dwarfer kinds, most of which dislike having their roots confined, and enjoy a position near the glass. Small plants and slow-growing species may be grown in hanging baskets. Whatever vessel is used, it should be three-fourths filled with clean potsherds and charcoal, and the remainder with clean, fresh sphagnum. During the growing season, which lasts from March to October, abundance of moisture, both at the root and in the atmosphere, is indispensable; care should also be taken that a regular supply of fresh air is insured. When at rest the plants require much less water, but it is important that they should not be allowed to get dry at any time. As soon as they begin to grow again, which is usually about March, the old sphagnum and loose potsherds should be removed without disturbing the roots, and replaced with clean, new material.

The geographical distribution of Vandas is so wide, and the conditions of temperature and atmosphere are so varying, that it is impossible to treat of the cultivation of the whole as one. V. cærulea, for instance, grows on the tops of trees on the Khasya Hills, where hoar-frosts are not infrequent. V. Cathcartii grows in similar situations at a lower elevation; whilst V. teres is subjected at some seasons of the year to severe drought.

The treatment which has proved most successful is given under each of these species.

V. suavis and V. tricolor are frequently subjected to a much higher temperature than is good for them. The idea that they require stove treatment is an erroneous one, and, if carried out, usually results in "leggy" plants and comparatively flaccid foliage, together with a deterioration in the quality and quantity of the blooms. The best place for them is the intermediate house, and the temperature in winter may fall as low as 50deg.: instances, indeed, may be found where plants in the best of health are wintered in a temperature frequently 3deg. to 5deg. below that point. In such a position the plants require comparatively little shade, and this treatment is always found conducive to abundance of flowers. When the plants lose their lower leaves through either age or improper treatment, it is the usual practice to cut off the bottom part of the stem and lower them. If the plant has developed roots above the pot, this may be done with safety, provided reasonable care be afterwards taken in shading and watering. When this is not the case, such treatment is much to be condemned; it is better, by careful shading, and otherwise treating the plants as recommended above, to encourage the growth of young shoots from the base.

V. Sanderiana we find to succeed best in the warmest and moistest position in the stove. Where not otherwise mentioned, the remainder of the species should be grown in a temperature of from 65deg. to 80deg. in summer, gradually falling to from 55deg. to 60deg. in winter.

V. Amesiana.—This distinct and delicately beautiful species is one of the latest additions to the genus. It is a dwarf plant, with stiff, fleshy, dark green leaves

1ft. long by nearly 1in. broad at the base, tapering gradually to a long, fine point. The fragrant flowers are in erect racemes of twenty to fifty; the sepals and petals are white, flushed with rose, and the lip is rich magenta-rose, except on the margin, which is paler; the flowers are 1½in. to 2in. in diameter, and their general aspect may be likened to that of a Phalænopsis. This species was introduced by Messrs. Low, of Clapton, in 1887, the native country being given as India. It flowers at various seasons. A considerable variation in colour is already apparent in cultivated specimens, the above being the typical form. It is said that in its natural state as many as eighty flowers are borne on a single spike. It will probably thrive under the same treatment as is recommended for V. cærulea, as hoar-frosts are said to occur in its habitat.

Williams' Orchid Album, t. 296.

V. Batemanni.—This is a plant of erect, stately habit, attaining a height of 4ft. to 5ft. The stem is 1in. in diameter, and from it the white, long, singularly thick roots proceed. The leaves are remarkably thick and rigid, channelled, pale green, and about 2ft. long. The spike is tall and erect, and bears (according to a plant which flowered at Kew) from twenty to thirty wax-like blooms; these are 2½in. across, with golden-yellow sepals and petals, freely spotted with brownish crimson; on the outside they assume a purplish hue: the lip is purple-crimson. This Vanda is a native of the Moluccas. It flowered for the first time in this country in June, 1846, with Mr. Bateman, after whom it is named. The flowering period extends over three months. Small plants do not flower freely. Syns. *Fieldia lissochiloides*, *Stauropsis Batemanni*.

Botanical Register, 1846, t. 59.

V. Bensoni.—A desirable species, with erect stems 1ft. high, bearing leathery, strap-shaped leaves, from 6in. to 8in. long. The flowers are 2in. in diameter, and are produced, ten or fifteen together, on racemes 1ft. to 1¼ft. long; the sepals and petals are obovate, white behind, yellowish green in front, marked with numerous reddish-brown dots; the apex of the lip is of a soft violet colour, the central part is rosy pink, and the two small lobes at the base, as well as the spur, are white. This pretty species is a native of Burmah, and was introduced to cultivation in 1866.

Botanical Magazine, t. 5611.

V. cærulea.—In colour, as well as in wealth of bloom, this species stands supreme amongst Vandas. Long after its introduction in 1849 it continued to be a rare plant, owing chiefly to improper treatment. Its requirements being now understood, the species has latterly acquired great popularity. It is, perhaps, the finest of all Orchids that flower in late autumn. The stems are usually from 1ft. to 2ft. high (sometimes more), bearing two opposite rows of dark green, rigid leaves 6in. to 8in. long, strap-shaped, and unequally two-lobed at the tips. The racemes are 1ft. to 2ft. long, and the flowers 4in. in diameter; over a score of the latter have been obtained on a single raceme, but twelve is a good average number. The oblong sepals and petals are of a beautiful pale lavender-blue, the small lip being more distinctly blue. In good varieties the parts of the flower overlap, and are often prettily tessellated with a darker shade. When they first expand, the flowers are much smaller and paler than they finally become. A native of the Khasya Hills.

Fig. 110 (for which we are indebted to the Editor of the "Garden").

The cultivation of this species differs somewhat from that of other Vandas. Chiefly, it requires less heat. On its native hills it is occasionally subjected to frost, and this it withstands without permanent injury. Under cultivation it may be grown with the Cattleyas, or even in the warmest part of the Odontoglossum-house, but a sunny

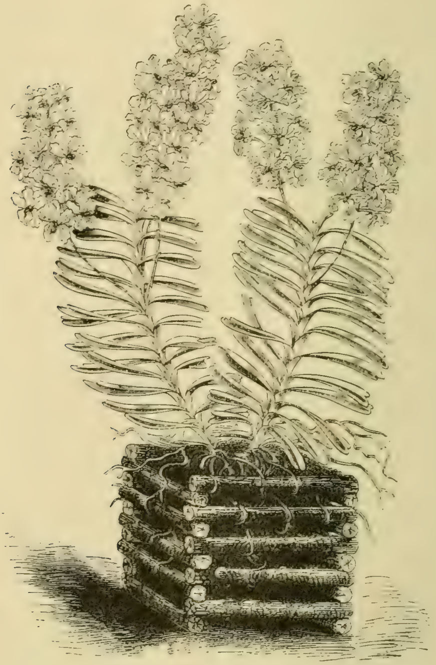
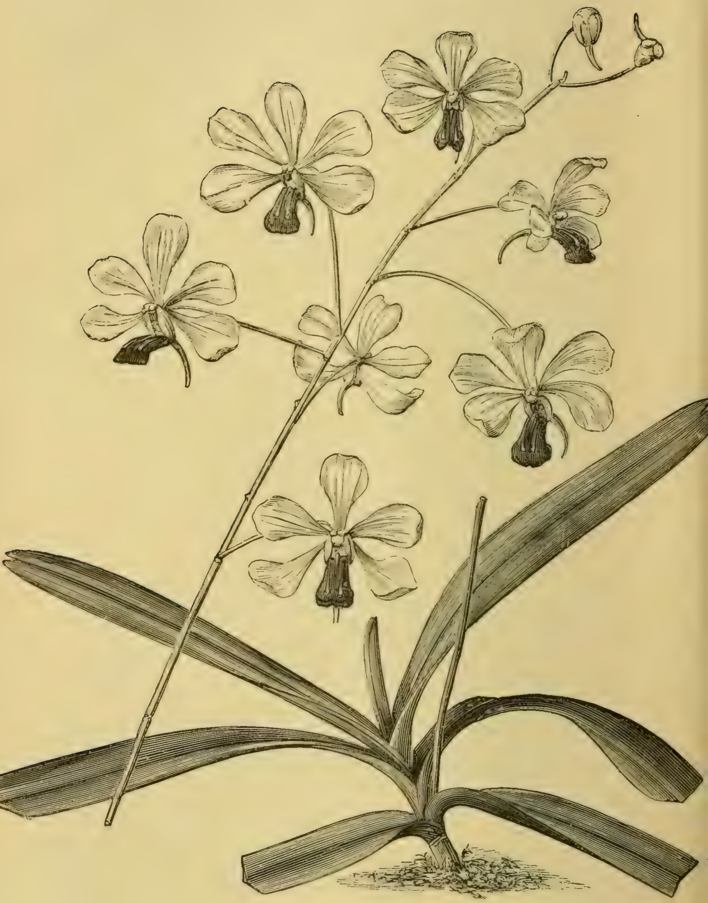


Fig. 110. Vanda cærulea
(much reduced).



VANDA CÆRULESCENS

(nat. size).

position and, above all, a constant supply of fresh air are essential. Shading should only be used during the hottest sunshine. It does not like to have its roots confined, and we find that it thrives most satisfactorily in long cylinders of teak. Abundance of water must be given during active growth, but from December to the time when the roots give signs of new growth but little is needed.

V. cærulescens.—A distinct and charming species, with stems ½in. in diameter and 1ft. to 2ft. high, bearing coriaceous, distinctly-channelled leaves 6in. in length, the apices of which are unevenly cut. The flowers are 1in. to 1½in. across, and upwards of a dozen are produced on the slender, erect scape; the sepals and petals are ovate, spreading, slightly incurved, and of a pale purplish blue, the smaller lip being of a rich violet-blue, with the anterior portion standing almost at right angles to the base. This species was originally discovered in Burmah by the eminent Indian botanist Griffiths, in 1837, but was not introduced to commerce until 1869.

Plate (for which we are indebted to Messrs. Veitch and Sons); Botanical Magazine, t. 5834.

Var. *Boxallii* has the sepals and petals white, with a lilac tinge, and a deep violet-blue lip. Introduced in 1877.

Botanical Magazine, t. 6328.

V. Cathcartii.—"By far the noblest species of Vanda. No more remarkable Orchid has been found in Northern India." So wrote Dr. Lindley at the time of its introduction in 1864. Subsequent knowledge compels us to somewhat modify this verdict, but V. Cathcartii still remains one of the most striking of Vandas. The tall stems are terete, and bear two opposite rows of pale green, narrowly-oblong leaves, about 6in. long, and unevenly lobed at the end. The flowers are 3in. to 4in. in diameter, and are produced, four or five together, on stout racemes. The sepals and petals are broad-oblong, overlapping each other; the ground-colour is pale yellow, but it is almost covered with transverse bands of reddish brown. The lip is three-lobed, white, tinged with red on the side lobes, the margin of the middle lobe being yellow and curiously incurved. Sir Joseph Hooker, who discovered this Orchid, says that it inhabits hot valleys in the Eastern Himalayas, and is usually found in the neighbourhood of waterfalls. Syns. *Arachnanthe Cathcartii*, *Esmeralda Cathcartii.*

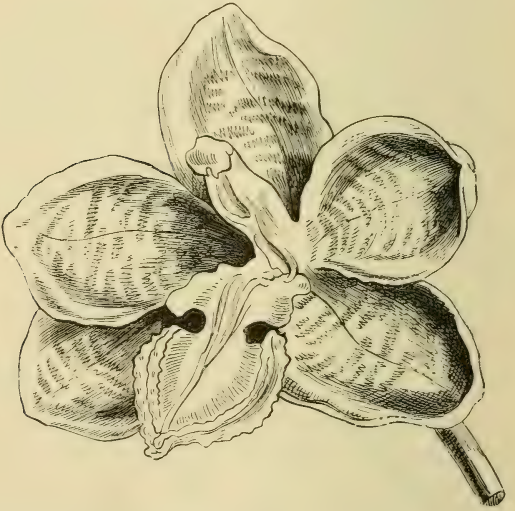


Fig. 111. Flower of Vanda Cathcartii
(nat. size).

Fig. 111; Botanical Magazine, t. 5845.

Usually this species does not flower with freedom; in Sir G. Macleay's garden at Pendell Court, however, it blooms annually. There it is trained on a back wall, which is always damp, and the temperature in winter is kept between 50deg. and 60deg. A moist position, therefore, should be selected, where the direct rays of the sun do not reach the plants.

V. Denisoniana.—A dwarf species, whose lovely white flowers distinguish it from all other Vandas. The leaves are 6in. to 10in. long, strap-shaped, and much decurved; from their axils the four- to six-flowered racemes are produced, each flower being about 2in. in diameter. The upper sepal and the two petals are broadly spathulate, the lower sepals being more ovate, narrowed at the base. The lip is contracted in the middle, the terminal portion dividing into two outwardly curving lobes. Reichenbach compared its shape to that of a blackcock's tail. A native of the Arracan Mountains, whence it was introduced in 1869. It blooms during the summer months.

Botanical Magazine, t. 5811.

Var. *hebraica* has sulphur-coloured sepals and petals, curiously marked on the inside with spots and bars, the resemblance of which to Hebrew characters suggested the name. Introduced from Burmah in 1885.

Williams' Orchid Album, t. 248.

V. gigantea.—A robust plant, erect in habit, with deep green, broad, leathery leaves 1½ft. long, bilobed at the apex. The spike is drooping, and usually bears ten to fifteen flowers, the sepals and petals of which are of a deep golden yellow, unevenly blotched with cinnamon-brown; the lip is small, thick, and fleshy, and, like the column, is white; the whole flower measures 3in. at its broadest diameter. Like V. Batemanni, this Orchid flowers freely only when large, and like it also remains long in bloom. It was originally found on the banks of the Tenasserim River. Syns. *V. Lindleyana, Fieldia gigantea.*

Botanical Magazine, t. 5189.

V. Hookeriana.—This is one of the most remarkable Vandas in cultivation. It has terete stems and leaves, as in the better-known V. teres, from which, however, it may be easily distinguished by its paler green, pointed, and slenderer leaves, and its altogether less robust appearance. Under cultivation the racemes usually produce two flowers, but specimens have been collected in a wild state bearing as many as five; each flower is 2½in. in diameter. The sepals are oblong, white, tinged with rose. The petals are broadly spathulate, wavy, larger than the sepals, white, spotted with magenta. The lip is 1½in. broad, white, the side lobes lined transversely, and the middle one longitudinally, with magenta-purple; spots of the same colour occur round the edges; at the base there are two triangular, deep purple appendages, one on each side of the column.

Williams' Orchid Album, t. 73.

After several unsuccessful attempts to introduce this species alive, the task was finally accomplished by Messrs. Low and Co. in 1873, but these plants did not flower until 1882. It may be successfully grown under treatment similar to that recommended for V. teres.

V. insignis.—A distinct and handsome species, which at present is rather uncommon. The erect stem bears stiff, strap-shaped, recurving, deeply-keeled leaves, about 10in. long. The axillary racemes bear six to ten flowers, each 2½in. in diameter; the fleshy sepals and petals are obovate, and on the inside are of a tawny yellow, blotched with a deep reddish brown; on the outside they are almost white.

The lip is of a rose-tinted white, the side lobes being small, and the central one ladle-shaped and about 1in. across. For many years a totally different plant, a variety of V. tricolor and a native of Java, was grown under this name, which was originally given to the species by Blume. A native of the Moluccas. The flowers are borne at midsummer.

Botanical Magazine, t. 5759.

Var. *Schrœderiana* has sepals and petals of a light orange-yellow, and a cream-coloured lip.

V. Kimballiana.—This lovely species has been introduced recently by Messrs. Low, of Clapton, with whom it flowered for the first time in the autumn of 1889. The leaves differ from those of any other Vanda, and may be described as intermediate between those of V. Amesiana (its nearest ally) and the terete form seen in V. teres; they are 1ft in length, narrow, subulate, with a thin furrow running down the upper side, and are closely arranged on the stem. The flowers are 2in. to 3in. in diameter. The sepals and petals are of the purest glistening white; and the lip is of a beautiful rosy purple, except the small side lobes, which are yellow, spotted with light brown. The upper sepal and the petals are much smaller than the two oblong lower sepals. The lip is broad and spreading, prettily frilled at the margin. The spur is 1in. long and slightly recurved. The native country has not been published.

Gardeners' Chronicle, 1889, vol. vi., p. 335.

V. Parishii.—This is a distinct and beautiful species, stout and dwarf in habit, and of very slow growth. The leaves are bright green, thick, and fleshy, in shape oblong, tapering somewhat towards each end, and notched at the apex. The raceme is ascending, and bears six to ten flowers; the sepals and slightly broader petals are firm in texture, cuneate-oblong, the greenish-yellow ground spotted freely with bright reddish brown; the lip is white, striped with orange at the base, the front lobe being of a pale magenta, bordered by a thin margin of white. It is a native of Moulmein, where it was originally discovered in 1862 by the Rev. C. Parish; it was not introduced, however, until 1870.

Williams' Orchid Album, t. 15.

This species enjoys abundance of light, and as it does not like its roots confined it ought to be planted in a basket or cylinder.

Var. *Marriottiana* is remarkably distinct. Unlike the typical form, its flowers are odourless. The sepals and petals are shining brown, tinged with magenta. Introduced in 1880.

Williams' Orchid Album, t. 61.

V. Roxburghii.—A handsome species, with stems 1ft. to 2ft. high, bearing two rows of narrow, leathery, recurved and channelled leaves, 6in. to 8in. long. The flowers are strongly perfumed and about 2in. in diameter, six or seven (sometimes as many as a dozen) occurring on the erect spike; the sepals and petals are white outside, and pale yellowish green, tessellated with olive-brown, inside; the middle lobe of the lip is violet-purple, the side lobes are white, and the short, recurved spur is rosy pink. The plant flowers from May to August, remaining for over a month in perfection. The species is a native of Bengal, and was introduced in 1850. Syn. *V. tessellata.*

Botanical Magazine, t. 2245.

V. Sanderiana.—The largest-flowered of all Vandas, each flower measuring about 5in. across. The plant is erect in growth, with recurved, leathery, strap-shaped leaves 1ft. in length, from the axils of which the stout racemes proceed. Twelve or even more flowers are borne on the raceme. The upper sepal and the smaller petals are broadly oval, and of a pale rosy lilac, tinged with yellow and dotted with crimson at the base. The lower sepals are larger, measuring 2in. in diameter, yellow outside, fawn-tinted inside, where they are covered (except at the edges) with a network of brownish crimson. The lip is small, concave behind, the anterior portion being flatter, but curled up at the sides; it is coloured dull crimson, and is greenish yellow towards the base. Altogether the colouration of the flower is most remarkable, as well as beautiful. In outline there is a considerable resemblance to Miltonia vexillaria, the large lip of the latter being represented by the two large sepals of the Vanda. This species was discovered in 1881, on the Island of Mindanao, one of the Philippine group. It flowers in September. From April to October—the growing season—the plants should be given the warmest and moistest position available. Syn. *Esmeralda Sanderiana.*

Botanical Magazine, t. 6983.

V. suavis.—One of the oldest and best-known of the genus. It is of tall, erect habit, handsome when well clothed with foliage and in perfect health; it blooms profusely, and the sweetly-scented flowers remain long in perfection: it is a plant that ought certainly to be in every amateur's collection. The stems are 2ft. to 5ft. high, with two rows of deep green, strap-shaped, decurved leaves 10in. to 12in. long. The axillary racemes bear about a dozen flowers, each measuring 2in. to 3in. across. Both the sepals and petals are spathulate, wavy, white on the outside, thickly streaked and spotted with crimson-purple inside. The petals are bent and twisted back to front. The lip is three-lobed, convex, the side lobes of a deep rosy purple, the central one paler, and deeply notched at the apex. The flowers are developed irregularly, but usually from

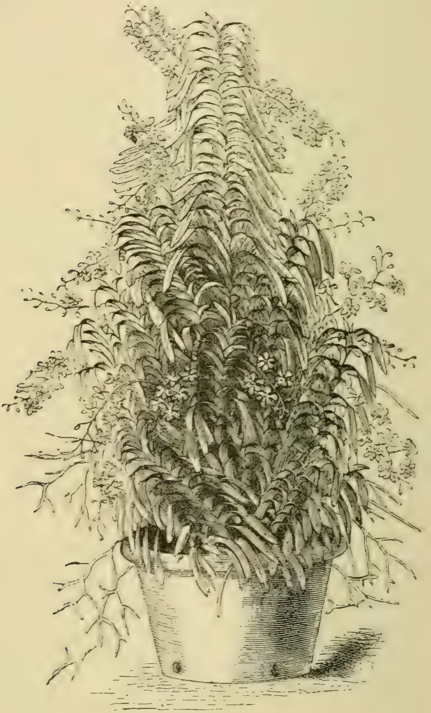


Fig. 112. Vanda suavis
(much reduced).

March to May. A native of Java, whence it was introduced in 1847.

Fig. 112 (for which we are indebted to the Editor of the "Gardeners' Chronicle"); Botanical Magazine, t. 5174.

V. teres.—A climbing species of singular and somewhat inelegant habit, but of great beauty in flower. It has dark green, rounded stems, about the thickness of a goose-quill, with rigid, cylindrical leaves, 6in. long. The raceme is axillary a few inches from the top of the stem, erect, and bears from three to six flowers, each 3in. across. The sepals are oblong, white, tinged with rose; the petals are larger and more rounded in outline than the sepals, which they overlap, and are coloured deep rose. The front portion of the lip is deep rose, veined with yellow; in the throat it is orange, striped and spotted with crimson. The side lobes curl upwards, forming a hood over the column; whilst the front lobe is spreading and deeply cleft at the apex. The flowering season extends from May to September. This species is found in Sylhet and in Burmah, and was introduced in 1828.

Botanical Magazine, t. 4114.

The striking beauty of this species has long been known to horticulturists, but it is only during recent years that it has acquired any degree of popularity. Previously most cultivators experienced difficulty in inducing it to flower; but that this was simply the result of improper treatment is apparent from the success with which it is now grown and flowered. The first requisite is a sunny position in a warm house which can be kept unshaded at all times. If sufficient plants are available, it is best to prepare a bed for them consisting of a 4in. layer of drainage, on which is laid an equal thickness of sphagnum. After cutting the stems into lengths of about 1ft., plant them in this, about

6in. apart. If there are only a few plants, they may be grown in pots. During summer they should be syringed about four in the afternoon, at the same time shutting the ventilators. The temperature should not fall below 70deg. during the night, and water must be given unstintingly. In winter a temperature of 55deg. to 60deg. will suffice, and the plants should be kept dry.

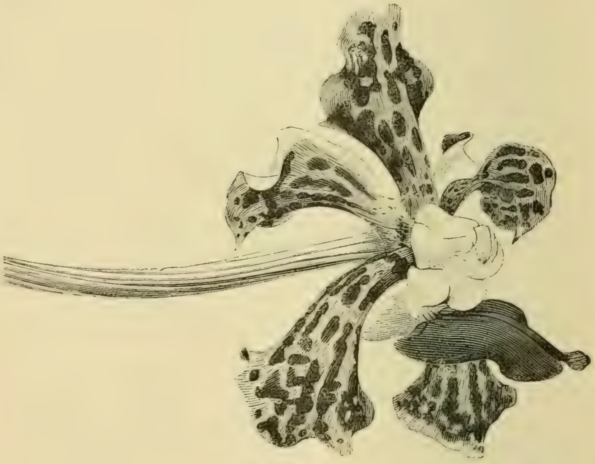


Fig. 113. Flower of Vanda tricolor Patersoni
(nat. size).

V. tricolor.—In foliage, habit, and inflorescence, this Orchid is very similar to V. suavis; Reichenbach considered them both varieties of one species. The chief distinction lies in the colour of the flower, V. suavis having a white ground, V. tricolor a yellow; but the two are linked by intermediate forms. The racemes usually bear about twelve flowers, although in vigorous specimens as many as eighteen have been obtained. Each flower is 2in. to 3in. in depth. The sepals and petals are obovate, narrowed towards the base, wavy, yellow (of various shades), spotted and blotched with brownish crimson. The lip is about 1in. long, notched at the apex, and of a bright magenta-purple, with white, parallel lines at the base; the small, erect side lobes are white. A native of Java, introduced, along with V. suavis, in 1847.

Botanical Magazine, t. 4432.

Of the named varieties now in cultivation the following are the most distinct:—

Var. *insignis.*—Sepals and petals pale yellow, with crimson markings; lip lilac.

Var. *Patersoni.*—Sepals and petals bright yellow, blotched with rich, brownish crimson; lip magenta-crimson.

Fig. 113 (for which we are indebted to the Editor of the "Gardeners' Chronicle").

Var. *planilabris.*—A very large-flowered variety. Sepals and petals unusually broad, the yellow ground-colour being streaked with rich brown; lip rose-coloured, with brownish-purple lines at the base.

Var. *Russelliana.*—A well-marked variety, distinguished by its pendulous racemes.

Vars. *Dodgsoni, Leopoldi*, *suaveolens*, and *Warneri*, are also handsome plants.

CHAPTER LXVII.

WARSCEWICZELLA.

THE six or seven species included in this genus are all good garden plants, which have been in cultivation in recent times, and probably may still be found in a few special collections. They possess the same kind of beauty that characterises their near relatives the Pescatoreas and Bolleas, and their cultivation presents the same difficulties as are experienced with those genera. When well managed, such species as W. marginata and W. Wendlandii are charming Orchids, their flowers being large, bright in colour, and fragrant; they also remain in bloom several weeks. Their distinctive character is their not possessing any pseudo-bulbs, the lanceolate leaves springing in tufts direct from the rootstock. The texture of the leaves is herbaceous, and they soon show the effects of bad treatment by "spotting" or falling off. The flowers are borne singly on short, erect scapes. The sepals and petals are lanceolate, and almost alike; whilst the lip is large, folded at the sides, spreading in front, and conspicuously coloured. The disc is flat, ribbed or toothed, and the column is short and thick. All the species of this genus are natives of Central or South America, where they are found growing in moist, shaded situations on the moss-covered trunks of trees.

Culture.—The treatment best suited to these plants is exactly the same as that recommended for Pescatoreas. Like them, the Warscewiczellas must never be allowed to get dry, and they must be kept in a moist, warm house all the year round.

W. discolor.—A distinct and pretty species, not unlike W. marginata, but smaller and different in colour. The leaves are about 8in. long, ¾in. wide, tapering to a point, the base channelled and jointed; scapes erect, shorter than the leaves, sheathed and noded, each bearing a solitary large flower 2½in. across; sepals white, oblong-lanceolate, spreading; petals shorter and broader, white, tinged with purple; lip large, folded laterally, forming a funnel 1in. across the mouth, the apex reflexed; colour of lip purple, fading to white at the margin; disc large, plaited and toothed, white. This species was introduced at the same time as W. marginata, and flowered with Messrs. Jackson and Sons, Kingston, in 1853. It is a native of Costa Rica. Syn. *Warrea discolor.*

Botanical Magazine, t. 4830.

W. marginata.—A well-marked species, with large, fragrant, attractively-coloured flowers. Leaves bright green, tufted, about 9in. long, 1½in. wide, narrowed to a point at the apex, channelled and sheathing at the base. Scape one-flowered, erect, 5in. long, with a sheathing bract at the base. Flower nodding, 2½in. across; sepals narrow, straight, folded; petals broader and recurved; lip large, three-lobed, the lateral lobes folded over the column and forming a broad funnel, the front lobe spreading; disc large, flat, and plaited. The colour of the whole flower is creamy white, with a broad, marginal band of rosy purple on the lip. The flowers are produced in June. Introduced in 1853 from New Granada, and figured under the name of *Warrea quadrata.* It is also known as *Huntleya marginata.*

Botanical Magazine, t. 4766.

W. velata.—A beautiful, fragrant-flowered species, very similar to W. marginata. It has leaves nearly 1ft. high, over 1in. broad, and bright green. The one-flowered scapes are 6in. high, and sheathed at the base. Flowers as large as those of W. marginata, but broader in the segments, which all curve upwards and are creamy white; lip large, five-lobed, 1½in. across the mouth, yellow, with a deep crimson band on the margin, the disc toothed and barred with purple. This plant flowers in the summer. It was introduced from New Granada in 1866. Syn. *Zygopetalum velatum.*

Botanical Magazine, t. 5582.

W. Wendlandii.—A large-flowered, attractive plant, with bright green leaves, arranged in two rows fan-like, about 8in. long, erect, 1in. across, jointed, with a broad, sheathing base and a pointed apex. The flowers are about 4in. across; sepals and petals nearly equal, oblong, acute, 2in. long, white; lip 2in. long, nearly as wide, recurved towards the apex, wavy along the margin, white, with the central portion deep purple-blue; the crest is thick, fleshy, crimped, ruff-like, purple in colour; and the short, thick column is white. The blooms appear in September. Native of Costa Rica. Syn. *Zygopetalum Wendlandi.*

Williams' Orchid Album, t. 126.

Var. *discolor* has green sepals and petals.

CHAPTER LXVIII.

ZYGOPETALUM.

In gardens this name is confined to about a dozen species, characterised by stout pseudo-bulbs, strap-shaped, leathery leaves, more or less erect, and flower-scapes which spring from the base of the matured pseudo-bulbs and bear from four to eight flowers. The type-plant of these is Z. Mackaii, on which the genus was founded in 1827. The sepals and petals are almost alike in size, form, and colour; they are arranged on the same plane, are partly joined to each other at the base, and are directed upwards above the level of the centre of the flower, almost fan-like. The lip is the most striking part of the flower, being large, spreading, flat, almost leathery in texture, and brightly coloured; the crest or disc is thick and fleshy, usually furrowed or toothed, sometimes not unlike the old-fashioned ruff. All the species flower in the winter season. According to the "Genera Plantarum," there are forty species of Zygopetalum, but these include the plants known in gardens under the following names: *Bollea, Huntleya, Promenæa*, and *Warscewiczella*, as well as those to which we here, for the sake of convenience, have limited the name Zygopetalum. The large, spreading, usually purple labellum, with its prominent, fleshy, ruff-like crest, and the short, fleshy column, are characters which, in conjunction with those already mentioned, enable one to readily distinguish all the plants known in gardens as Zygopetalums.

Culture.—Although all the kinds are epiphytal in a state of nature, they thrive and flower better when grown in pots than when cultivated on blocks or in baskets. They require plenty of moisture at all times, a rich, well-drained peat soil, such as suits the Odontoglossums, and the temperature of a warm greenhouse: in a stove they are apt to become weak and spotted, though they may grow freely and look well for a time. At Kew, the plants are cultivated in a house the temperature of which often falls to 50deg. in winter, whilst in summer the structure is unheated: here they grow well and flower abundantly. The only exceptions are Z. rostratum, which requires the warmth of the stove, and Z. maxillare and Z. Gautieri, both intermediate-house kinds.

Z. Clayi.—A hybrid obtained by crossing Z. maxillare with Z. crinitum. It was raised and flowered in 1877 by Colonel Clay, of Birkenhead, after whom it was named. It is a robust grower, having ovate, furrowed pseudo-bulbs 3in. high, and stout leaves 1½ft. long. The scape is erect, stout, about six-flowered; flowers 4in. across; sepals and petals apple-green, blotched with brown; lip 1½in. across, bluish purple, with lines of a deeper colour. The blooms are borne at various times of the year.

Z. crinitum.—This scarcely differs from Z. intermedium in habit, pseudo-bulbs, and leaves. The flowers are borne on long, stout scapes. The sepals and petals are 2in. long, green, with fewer brown blotches than in Z. intermedium. The lip is 2in. across, spreading, wavy, white, with purple lines springing from the crest, radiating towards the margins, and branching vein-like. The principal characters in this species are the shagginess of the lip about the lower part, and the wide leaves. As a free-flowering plant of easy cultivation it is quite the equal of Z. intermedium, along with which it requires to be grown. It is a native of Brazil, and was introduced in 1834.

Botanical Magazine, t. 3402.

According to Lindley, there are varieties of Z. crinitum with pink, blue, and almost colourless veins in the lip.

Z. Gautieri.—A very attractive species, in the way of Z. maxillare, from which it differs chiefly in the flowers being about half as large again; they are also, as a rule, deeper in colour, especially on the fleshy labellum, which in good varieties is very deep purple-blue, with a still darker-coloured crest. There are also varieties with pale-coloured flowers. The species is a native of Brazil, and was introduced in 1868. It requires the same treatment as Z. maxillare. It is not unusual for dealers to call good varieties of Z. maxillare by the name of Z. Gautieri.

Williams' Orchid Album, t. 28.

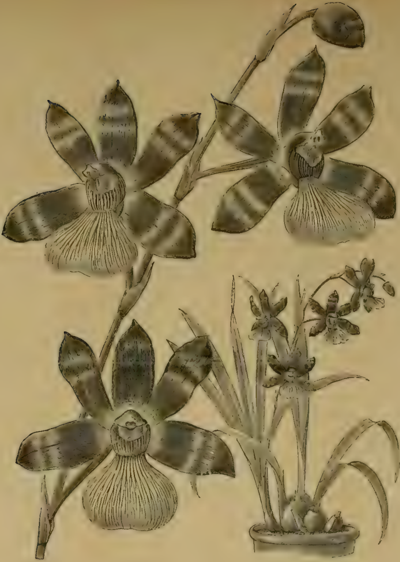
Z. intermedium.—A handsome, free-flowering, easily-grown species, and so like Z. Mackaii as to be often mistaken for it. The main difference between the two is that in the latter the lip is glabrous, and the veins are coloured pure blue, whilst in Z. intermedium the lip is more or less hairy, and veined with purplish blue. Z. crinitum is another species very similar to these two; indeed, there do not appear to be any good botanical characters to separate them. In Z. intermedium the pseudo-bulbs are large and egg-shaped. The leaves are strap-shaped, about 1½ft. long, 1½in. broad, bright green. The scape is erect, as long as the leaves, and it bears about six flowers, each nearly 3in. across. The sepals and petals are equal, 1½in. long, incurved at the tips, green, with large, confluent blotches of brown. The lip is 1½in. across, wavy, narrowed to a stalk-like base, and coloured bluish white, with radiating, broken lines of purplish blue; the disc is fleshy and white; the column is thick, winged, and coloured green and white. The flowers are produced in winter, and last for about two months. Introduced from Brazil in 1844.

Sander's Reichenbachia, t. 16.

Z. Mackaii.—The general character of this plant is described under Z. intermedium. The flowers are smaller than in Z. intermedium, the sepals and petals pale in colour, the lip smaller and quite glabrous, whilst the radiating, vein-like lines are coloured deep blue; the crest, also, is two-lobed. So far as we can learn, the true Z. Mackaii is very rare in cultivation; it is, however, so very similar to the two commoner ones, viz., Z. intermedium and Z. crinitum, that, except for botanical collections, the one may do duty for the other—as, indeed, they already often do. Z. Mackaii was introduced from Brazil in 1827. The genus was founded upon it by Sir William Hooker.

Botanical Magazine, t. 2748.

Z. maxillare.—An old garden favourite, known as the Tree-fern Orchid, from the fact that it is commonly found growing wild upon the stems of tree-ferns, and is often imported with them. We lately saw some fine examples of it growing upon living tree-ferns in the Jardin des Plantes, Paris, the effect produced by its richly-coloured flowers against the brown scales of the fern-stem being particularly good. The rhizome is stout, creeping, and bears ovate pseudo-bulbs 2in. long, each with two or three leaves 1ft. long, 1in. broad, with conspicuous nerves. The scape springs from the base of the ripe pseudo-bulb, and is 9in. long, with from six to eight flowers, each 1½in.



ZYGOPETALUM SEDENI, SHOWING HABIT AND DETACHED INFLORESCENCE

(Habit, much reduced; Inflorescence, nat. size).

across; sepals 1in. long; petals the same length, but narrower; they are green, with large blotches of brown. The lip is nearly circular, a little more than 1in. wide, and coloured purplish blue, the large, ruff-like crest being ½in. deep, and dark purple in colour. This species blossoms in winter, and remains in beauty for about six weeks. It requires intermediate-house treatment, and plenty of water always, and should be planted on a raft or block of fern-stem. A native of Brazil; introduced in 1844.

Botanical Magazine, t. 3686.

Z. rostratum.—A large-flowered, well-known species, from Demerara, where it is common on small trees in the shade of forests. It has a creeping rhizome, bearing, at intervals of 1in., ovate, flattened, two-edged pseudo-bulbs 2in. long, at first inclosed in the sheathing portions of the basal leaves. The permanent leaves are 5in. long, 1½in. wide, acute at the apex, dark green. The scapes, which are developed with the new growths, are 4in. long, and bear from one to three flowers, each from 4in. to 6in. across; the sepals and petals are narrow, spreading, white; and the broad, heart-shaped lip is nearly 3in. long, flat, white, with a rose-purple crest and radiating lines of the same colour. The column is short, thick, with a pair of ear-like wings near the apex. This species requires the same treatment as Z. maxillare, but a higher temperature, the moist, hot stove being most suitable for it. It flowers in May or June. Introduced about 1830.

Botanical Magazine, t. 2819.

Z. Sedeni.—A hybrid, raised in the nursery of Messrs. Veitch, Chelsea, and flowered by them in 1883. Its parents were Z. maxillare and Z. Mackaii; it is, therefore, very similar to Z. Clayi, the main difference being in its narrower leaves, in the sepals and petals being wholly brown, shaded and margined with green, in the form of the lip, and in its colour being pale purple, except towards the base and on the crest, where it is deepened to rich velvety purple. It is a free-flowering and easily-managed plant.

Plate (for which we are indebted to Mr. Wm. Bull).

CHAPTER LXIX.

BRITISH AND OTHER HARDY ORCHIDS.

THERE are a considerable number of pretty-flowered and highly interesting terrestrial Orchids which may be grown in the open air in this country. Besides those native species which are worth notice for the quaintness of form and fantastic colours of their flowers, a great many terrestrial kinds from North America and from the European Continent are available for open-air gardening, and when the conditions are suitable they are capable of producing a beautiful display. Such are the Cypripediums, the Fringe, Bee, and Butterfly Orchises. These plants, however, obtain comparatively little notice from English Orchid fanciers, and they are consequently very little grown. Most of those mentioned in this Chapter may be procured at little cost from the few English nurserymen who pay attention to these plants, the principal among them being Mr. T. S. Ware, of Tottenham, in whose nursery there has been for many years a rich collection of the best of hardy terrestrial Orchids. A Plate showing the comparative sizes and shapes of some of the British species faces page 18.

The failures which attend the first attempt to grow a collection of hardy species in an ordinary garden are often trying enough to dishearten anyone not possessed of a good stock of perseverence. The plants are, as a rule, very impatient of removal, and generally too little care is taken by collectors to preserve the fleshy roots and tubers intact and unbruised. To attempt to establish roughly-treated plants of most of these Orchids is labour in vain. This fact accounts for the belief that they are hopeless as garden plants. On the other hand, we could name a few growers who have met with much success in their cultivation. Chief amongst these is the Comte de Paris, who, when at Twickenham, grew many hardy kinds perfectly. Mr. Webster, Mr. Thomas Ware, and Mr. Elwes also have been successful with them. When well grown there is no more delightful picture than tufts or large groups of such plants as Cypripedium spectabile, Orchis foliosa, and its two allies O. latifolia and O. maculata. Then there are the Ophrys, almost every one of which is possessed of some charm in the form and markings of its flowers.

There are three methods which have proved successful in the cultivation of hardy Orchids: these are the bed or rockery method, the frame method, and that of pot culture.

Bed or Rockery Treatment.—A bed for these plants should be so situated as to be shaded from the sun, except in the morning or evening. The shade of shrubs or trees, or, failing these, that of a wall with a south-east or south-west aspect, will answer. The soil should be taken out to a depth of about 2ft., and replaced by 6in. of good drainage, brick-rubble being the best material for this purpose. Over this a layer of tough turfs should be placed. The soil must necessarily vary with the needs of the plants for which it is intended. If a representative collection is to be planted in the bed, then a portion of it should be filled with a mixture of sweet black peat (such as is used for Heaths), leaf-mould, and coarse sand: this will accommodate those plants to which loam and lime are distasteful. Another portion should be filled with a mixture of peat, loam, and leaf-mould in equal parts, and the remainder with good light turfy loam, mixed with old mortar from buildings, or with chalk.

When planting, the tubers and roots should be buried about 2in. below the surface. The roots should be handled gently and spread out, slightly pressing the soil about them. In dry weather the border must be kept well watered; the water for those species which are not in loam should be soft or rain water. A mulching of moss or cocoa-nut fibre should be placed on the bed in hot weather. These conditions may be slightly modified if the plants are to be grown amongst stones in the rockery.

Should the weather in winter be very wet and the temperature changeable, a covering of boards or lights, or even dead leaves, will protect the plants from harm. It is not the cold but the alternations of mild with cold weather, fogs, and rain, which destroy these plants when left unprotected in an English garden.

Frame Culture.—The frame is used by some in preference to the open border, as it is much easier to regulate the moisture and temperature by means of movable lights. Except in winter the plants are left exposed to the air and weather. For such as the Ophrys, which require a good ripening in the autumn by means of drought and sunlight, the lights are a great advantage. In other respects the treatment of plants in frames should be similar to that recommended for those in open beds.

Pot Culture.—Where it is desirable to remove the plants, when in flower, to a conservatory or indoors, they may be grown in pots: these should vary in size according to the nature of the plants, such strong-rooting kinds as the Cypripediums and Orchis foliosa requiring a liberal amount of root-room, whilst the Ophrys, Serapias, and others, which have not much root, require considerably less room. It is best to put about five plants of these smaller kinds in a 6in. or 8in. pot. The pots should be well drained. The soil used for plants in pots should be specially good.

Collecting.—The right season for collecting terrestrial Orchids is after the flowers are over and the leaves have begun to fade. The tubers should be kept in damp moss until they can be planted.

Arethusa.

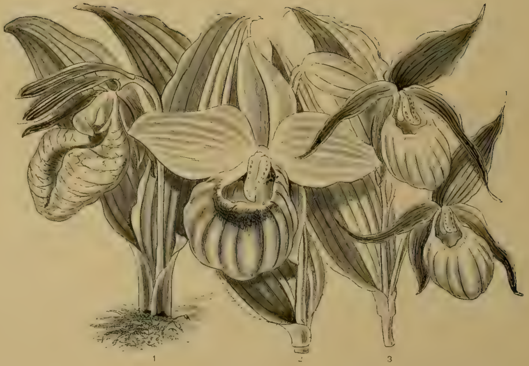
A. bulbosa.—A swamp-loving plant from North America, and a pretty little Orchid for a fissure in a rockery. Its one-leaved stem is about 8in. high, and it bears a large, solitary, rosy-purple, scented flower, which develops in July.

Calopogon.

C. pulchellus is from the same country, and thrives under the same conditions, as the Arethusa. It is pretty in flower, but difficult to establish here. Its leaves are grassy, its stems 1ft. high, and two- to four-flowered. Each flower is 1in. across, bright purple in colour, the sepals and petals spreading, and is peculiar in having the labellum at the top. It blooms in July or August.

Cypripedium.

For generic description the reader is referred to Chapter XXVIII., p. 152.



HARDY CYPRIPEDIUMS.

1, C. ACAULE; 2, C. SPECTABILE; 3, C. CALCEOLUS.

(all nat. size.)

C. acaule.—A large-flowered, distinct species, with a pair of broad, ovate leaves 4in. long, folded at the base, and pubescent. Scape erect, 6in. to 9in. high, leafless, with a green bract at the top, one-flowered. Sepals and petals narrow, 1½in. long, slightly twisted, whitish; pouch ovate, nearly 2in. long, irregularly slit from the base to the apex; colour deep rose, with darker reticulating lines. This species should be grown in peat, or peat and leaf-mould, in a shady position. It thrives under Rhododendrons if kept well watered in dry weather. It also thrives when grown in pots, and is useful for forcing. A native of North America, where it grows in woods.

Plate, Fig. 1.

C. arietinum.—The smallest-flowered of the hardy kinds. Its stem is about 6in. high, and bears four leaves, which are lanceolate and nearly smooth. Flower-segments ½in. long, reddish, with white veins; pouch as long as the segments, and of the same colour. The pouch is conical and deflexed at the apex, a character to which the popular name of Ram's-head Orchis is due. This species inhabits swamps and damp woods in North America. It thrives here in bog-peat, or in good sandy leaf-mould, and flowers in June. Introduced in 1808.

Botanical Magazine, t. 1569.

C. Calceolus.—This is interesting as being the largest-flowered amongst British Orchids; it is also an ornamental and useful garden plant. Stems 1ft. to 1½ft. high, with about four large, ovate, pointed leaves, and one or two flowers. The latter have dark brown, wavy sepals and petals, 1½in. long, the dorsal sepal the broadest; pouch 1in. long, clear yellow, the end rounded and curved upwards. This species blossoms in May or June. It should be planted 6in. deep, in good, light, fibrous loam, in a deep fissure of the rockery, or in a border where it will get shade from bright sunshine. It may also be cultivated in pots or pans, in a mixture of loam and peat. When happily situated it increases rapidly, and we have seen patches of it a yard square, bearing over fifty flower-spikes. Besides its British habitat, this species is also found in Northern Europe and Asia down to the Himalayas.

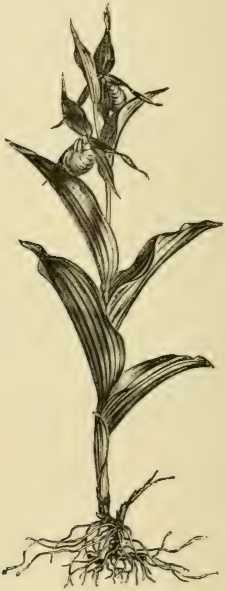


Fig. 114. Cypripedium Calceolus
(much reduced).

Fig. 114; Plate, Fig. 3.

Var. *major* has flowers 4in. across.

C. candidum.—This is almost as small-flowered as C. arietinum. Its stem is about 1ft. high, and bears several erect, lanceolate, pubescent leaves, 4in. long. Flowers solitary, 1½in. across; sepals and petals 1in. long, green and brown; pouch about the size of a robin's egg, laterally compressed, pure white, with a few spots of purple about the mouth. It blossoms in June, requiring boggy peat and plenty of moisture. It is not a showy species. A native of North America, whence it was introduced in 1826.

Botanical Magazine, t. 5855.

C. guttatum.—An interesting, pretty-flowered species, not often met with in gardens. It is about 9in. high, the short stem bearing two leaves, which are ovate, pointed, decumbent, and downy. Scapes 6in. long, hairy; dorsal sepal broadly ovate, ¾in. long; petals the same length, but much narrower and decurved; pouch as large as a pigeon's egg, with a large aperture; colour of the whole flower white, with large blotches of rich crimson. The blossoms are developed in summer. Collectors describe the conditions under which this species grows when wild as being "half-shaded positions in woods, in soil composed of half-rotten leaves, usually under birch-trees. Here it grows freely like lily-of-the-valley, its rhizomes being only just buried." It should be grown in leaf-mould, in a moist, shaded position on the rockery. A native of Canada and the northern parts of Europe and Asia.

Paxton's Flower Garden, i., t. 183.

C. Irapeanum.—This rare and beautiful species may be called a gigantic C. pubescens. The stems are leafy, slender, 1½ft. high. The leaves are ovate, pointed, stem-clasping at the base, and pale green. The flowers are 5in. across; the sepals are ovate, 2in. long, a little smaller than the petals, both being pubescent and bright yellow. The pouch is of the same colour but a little darker, with a few blotches of crimson in the mouth; it is fully 2in. across at the base. The great beauty of this plant has induced many collectors to send home quantities of it for cultivation, but it has never yet been successfully grown. It is said to be almost, if not quite, hardy. A native of Mexico, near a town called Irapeo, where it grows at an elevation of 5000ft.; introduced and flowered in 1846. The treatment recommended for C. pubescens is said to be the most satisfactory of the many methods tried for this Mexican gem.

Botanical Register, t. 58.

C. japonicum.—A truly wonderful plant, of which comparatively little is known here. From a mass of roots and creeping rhizomes a pair of leaves are developed, much in the same way as in C. acaule, but larger, plicate, almost fan-shaped, and 4in. across. The scape is 1ft. high, leafless, and hairy; it bears one large flower, in which the ovate-lanceolate sepals and petals are 2½in. long, greenish, with crimson spots at the base of the latter. The lip is gigantic, being 2½in. long by 1½in. wide, and white, marbled with pink; the aperture extends two-thirds of the way down, as in C. acaule. C. japonicum was known only from Japanese descriptions and drawings until it was imported from Japan by Messrs. Wallace, of Colchester, who succeeded in flowering it in 1875. It is said to grow in abundance in moist woods in Japan. The plant which flowered at Colchester was planted in light loam in a pot, and grown in a cold fernery. Some recommend pure peat for it, but, so far as we know, the loam treatment is the only one that has resulted in flowers.

Gardeners' Chronicle, 1875, vol. iii., p. 624.

C. macranthum.—A very remarkable species, almost grotesque in the form and colour of its large flowers. The stems are 1ft. or more high, pubescent, with ovate, striated, green leaves, 5in. long, hairy only about the base. The

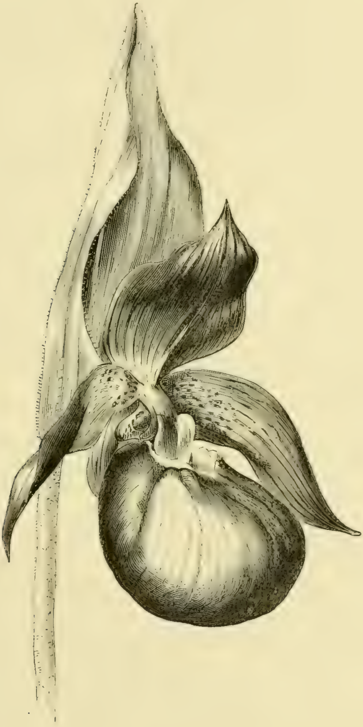


Fig. 115. Flower of Cypripedium macranthum
($\frac{1}{2}$ nat. size).

flowers are borne singly on the apex of the stems, and they have broad, ovate sepals 1½in. long, petals a little shorter and narrower, and the pouch large, projecting, inflated at the base, nearly 3in. long, and coloured salmon-red, mottled and veined with a darker shade, almost white at the mouth. This plant is difficult to manage under cultivation, having been known to flower only a few times in England, although many people have grown it. Loam appears to agree with it best; Messrs. Backhouse flowered it by planting it in a fissure of the rockery in strong rich soil. It is a native of Siberia, in latitude 58deg., where it grows in open places or in birch woods.

Fig. 115 (for which we are indebted to the Editor of the "Garden").

C. ventricosum, also a native of Siberia, differs from C. macranthum only in having shorter petals and being deeper in colour.

C. occidentale.—This has stems 1½ft. high, with ovate-lanceolate, slightly hairy leaves. Each stem bears from one to three flowers, which have brown-purple sepals and petals, a white lip striped with red inside, and a yellow staminode also spotted with red. It is a native of California, and has lately been plentiful in English nurseries. Syn. *C. montanum.*

Gartenflora, t. 1036.

C. parviflorum. — A near ally of the British species, C. Calceolus. Its stems are 1ft. or more high; the leaves are ovate, slightly downy, 5in. long. The flowers are large and deliciously fragrant; sepals ovate-lanceolate, 1½in. long; petals narrower, a little longer, twisted; both purple-brown with darker-coloured lines. Pouch large, ovate, 1½in. long, bright yellow, with a few dots of crimson about the mouth.

This species is easily cultivated in England; it should be planted in sandy leaf-mould or loam, and be kept moist all the summer and shaded in bright weather. It may be grown successfully in pots along with such species as C. spectabile. It is found wild in swamps and damp woods in North America, whence it was introduced over 100 years ago.

Botanical Magazine, t. 3024.

C. pubescens.—A good, useful plant for the rock-garden or herbaceous border. It grows to a height of 2ft., and has leaves 8in. long by 2in. wide, tapering to both ends and covered with soft hairs. The flowers are large; sepals 2½in. long and ¾in. wide; petals 4in. long, narrow and twisted; both yellow with a few blotches of brown and a few hairs at the base of the petals. Pouch 2in. long, ovate, irregular in shape, folded over at the mouth, flattened at the sides, coloured pale yellow. This species flowers in June. It should be planted in light loam or leaf-mould, although it is said to grow naturally on stiff clay in woods. A native of North America; introduced in 1790.

Gardeners' Chronicle, 1883, vol. xix., p. 785.

C. spectabile.—This is the handsomest and most useful of all the hardy kinds of Cypripedium. When happily situated, it produces stems between 2ft. and 3ft. in height, bearing lanceolate, plicate leaves about 7in. long, acute-pointed and hairy. The flowers are borne singly or in pairs, and are each 3in. across; sepals almost round, 1½in. long, concave; petals ½in. wide, 2in. long; pouch almost orbicular, broadest at the base, where it measures about 1½in. across; staminode large, ovate, white. The colour of the sepals and petals is white, of the pouch some shade of rose, the best varieties being a clear red; others have wholly white flowers. This grand species inhabits peat bogs in North America, where it appears to be very abundant, and is known as the Mocassin Flower. When

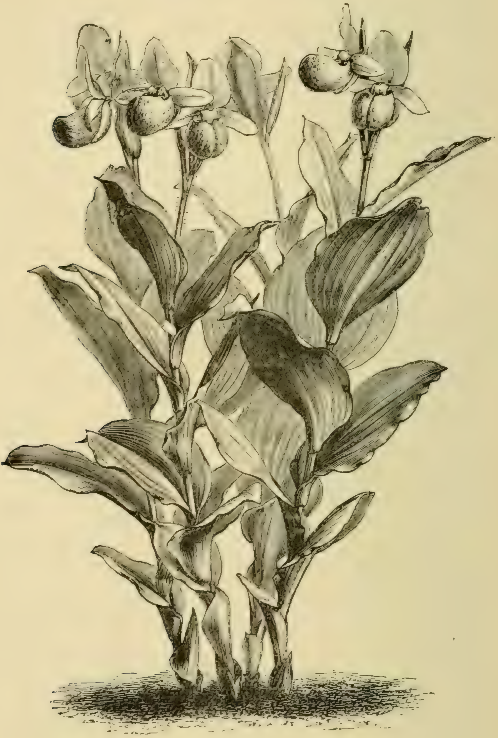


Fig. 116. Cypripedium spectabile
(much reduced).

planted in a moist border of deep peat, it grows well and flowers annually. It also thrives when planted in pots, placed in a cold, shaded frame, plunged in cocoa-nut fibre or ashes, and kept moist. In March it may be taken into a slightly heated greenhouse, where it will soon push into growth and flower. It should never be allowed to get dry; introduced in 1731.

Fig. 116; Plate, Fig. 2.

Habenaria.

There are about one hundred species of this genus, but very few of them are of any value as garden plants. Of the three which are natives of this country, only one, viz., H. bifolia, has any beauty. Several species from North America, also, are sometimes seen in English collections, but they are not common. The plants have two tubers, leaves and habit as in Orchis, and loose-flowered spikes of long-spurred, often fringe-lipped, flowers.

Culture.—The British species requires the same treatment as Orchis, but the American kinds must be treated as bog-plants, and grown in a shaded situation in peat, or peat and chopped sphagnum or leaf-mould.

H. bifolia.—The British Butterfly Orchid. It grows to a height of about 1ft., and has two or three ovate leaves; from the centre of these springs the erect, leafy spike of white flowers, each 1in. across, and very fragrant. It is abundant in open woods and moist meadows, which are redolent with the fragrance of its flowers in June or July.

H. ciliaris.—The Yellow-Fringed Orchis of North America, where it is abundant in bogs and wet places, flowering in July and August. The leaves are green and oblong; the spike is from 1½ft. to 2ft. high, and bears a crowded head of bright orange-yellow flowers, with rounded sepals, linear petals, and an oblong lip, margined with a long hair-like fringe. This is one of the prettiest of hardy Orchids. It should be grown in wet peat and sphagnum.

H. blepharoglottis is from the same country as the above, and differs from it chiefly in having white flowers. It is a decidedly pretty plant when well grown.

H. fimbriata.—The Purple-Fringed Orchis of North America. It has a stem 2ft. high, bearing a loose head of purplish flowers, each over 1in. broad, with a large fan-shaped lip deeply fringed about the margin. When happily treated this species produces, in June, spikes of from thirty to fifty flowers, which last for about three weeks.

Ophrys.

There are about thirty kinds of Ophrys described, three of them being natives of Britain, and familiarly known as the Bee, the Spider, and the Fly Orchis. They all closely resemble each other in the characters of their tubers, leaves, and flower-stem, and in the form of their flowers, the only marked difference being in the shape and colour of the segments and lip. The tubers are ovoid; the leaves are green, oblong, acute, and arranged in a rosette about 6in. across. The flower-spike varies in height from 6in. to 18in., and it bears from three to six flowers; these are about 1in. across, and the only conspicuous part is the lip, which is usually convex, velvety, and beautifully coloured. The resemblance of these flowers to various insects is due to the arrangement of the colours of the lip, as well as its form. The colours vary considerably in the different individuals of the same kind, a character which led Linnæus to believe that all the Ophrys were probably forms of one very variable species.

Whilst every one of the thirty admitted species of Ophrys is worth growing, some of them are not easily accommodated in the garden, and others are difficult to procure. We have selected a few of the best.

Culture.—The most successful cultivator of these plants in England was the Comte de Paris, who, a few years ago, exhibited many beautiful specimens at the London plant exhibitions. One of these is represented in the Plate of Ophrys tenthredinifera. If planted in pots they should be plunged in ashes or cocoa-nut fibre during the growing season. Good fibrous loam, with sharp sand and a little pounded chalk, should be used. In this the tubers must be buried 1in. below the surface, and the soil pressed moderately firmly about them; 6in. pots are the most convenient, and into each about five plants should be placed. They may also be grown in a fissure of the rockery.

O. apifera.—The Bee Orchis, common in this country in chalk or limestone districts. We have seen thousands of it in small areas about Dorking, in flower in June. The stems are about 1ft. high, and bear from three to six flowers, in which the lip is the most conspicuous part, being ovate, convex, velvety brown-purple, spotted with orange yellow.

O. aranifera (the Spider Orchis), with a broad dull-brown lip, spotted with yellow, and **O. muscifera** (the Fly Orchis), with a three-lobed, almost flat lip, coloured bright red brown, with a blue patch and sometimes a yellow edge, are also British kinds which differ from the Bee Orchis only in the characters here mentioned.

O. insectifera.—A continental plant which Linnæus took as the type of all the Ophrys. It has a stem 8in. high, the rosette of leaves measuring 5in. across. There are about six flowers on each spike, and they are 1in. across;

the sepals are green, the petals white, and the lip velvety purple, with two streaks of grey blue.

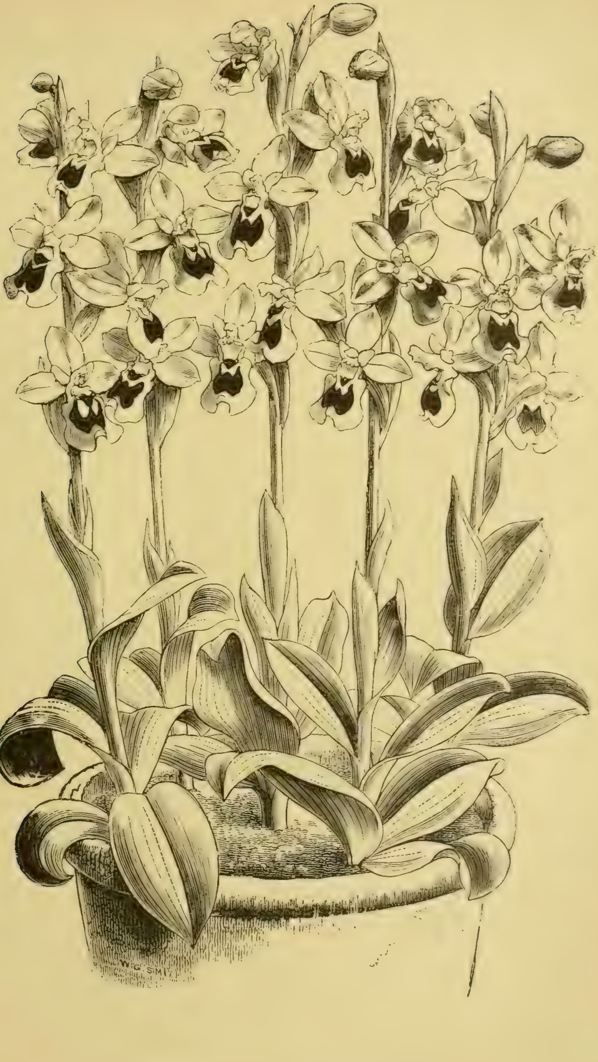
O. tenthredinifera, the Sawfly Orchis, is a native of the European continent. It is a strong grower, with spikes 9in. high, greenish brown sepals and petals, and a velvety brown and yellow lip.

Plate (for which we are indebted to the Editor of the "Gardeners' Chronicle").

The following are all more or less known in English collections, but they are not often grown with success; they are abundant in Italy, France, &c., and are imported in quantity by dealers in this class of plants. **O. aurea**; **O. Bertoloni**, with brown-purple lip; **O. bombylifera**; **O. exaltata**; **O. lutea**, with green sepals and petals, and a golden yellow lip, maroon-purple in the centre, with an eye-like patch of steel blue; and **O. speculum**, in which the sepals and petals are banded with purple, and the lip peacock blue, with a golden iris and purple margin.

Orchis.

Culture.—Some of the Orchises are very pretty in flower, and they are easy to manage in the garden. They require a rich loamy soil, a sheltered situation either in a border or in the rock-garden, plenty of water, and an annual mulching with rotten manure. The British species here mentioned are abundant in moist meadows in most parts of the British Islands, so that a good stock of them may easily be obtained. In transferring them from their wild homes to the garden, they must be carefully taken up so as not to injure the feeding roots and new tubers. The right time to remove them is after the flowers have faded, say



OPHRYS TENTHREDINIFERA

($\frac{1}{2}$ nat. size).

September, when the new tuber will have about matured: the wrong time to attempt this is when the plants are in full flower and the tuber is only partly formed. If collectors would bear this in mind, we should not see so many thousands of these plants sacrificed in attempts to transfer them from fields to cultivation.

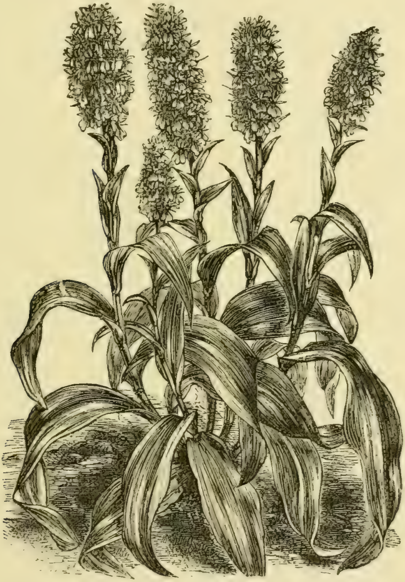


Fig. 117. Orchis foliosa
(much reduced).

O. foliosa.—A robust species, from Madeira, allied to O. latifolia, and hardy in England. Its stems are about 3ft. high, with shining green, ovate leaves, 10in. by 3in., a spike 7in. long by 3in. through, crowded with bright purple, or lilac, or sometimes almost white flowers. Planted in deep fibrous loam and protected from slugs, it makes a very showy border or rockery plant. It blooms in July or August. It is also a good pot-plant, and by keeping it in a cool frame until about February, and then removing it into a warm greenhouse, it may be had in flower in April.

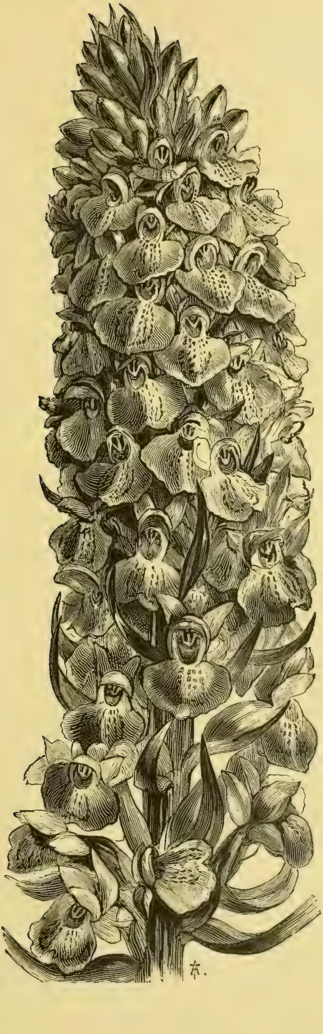
Fig. 117 (for which we are indebted to Mr. Thomas S. Ware).

O. latifolia.—The Marsh Orchis, which is so frequent in marshes and moist meadows in this country. It varies considerably in height, width of the leaves, and size and colour of the flowers. The best forms are fully 1ft. high, with the flower-spike as represented in the accompanying Plate, and coloured deep purple. It differs from O. maculata only in having unspotted leaves and a less distinctly-lobed labellum.

Plate (for which we are indebted to the Editor of the "Garden").

O. laxiflora is a European species which does not occur in the British Islands, except in Jersey and Guernsey. Its leaves are unspotted, its stems are from 1ft. to 3ft. high, and its flowers 1in. across, bright red-purple, the lip being spotted with a darker colour. It blooms in May or June, and is easily kept if planted in a moist situation in a loamy soil.

O. maculata.—An easily-managed British species, often met with in gardens. It has narrow, spotted leaves, and an erect spike 1ft. or so high, bearing a compact pyramid of pale purple or white and spotted flowers, which are at their best in June or July. It thrives in a moist, loamy



FLOWER-SPIKE OF ORCHIS LATIFOLIA
(nat. size).

soil, in a slightly shaded position. It is one of the commonest of field Orchids, and may be easily transferred to the garden.

O. pyramidalis.—One of the prettiest when seen in the mass, its compact spikes of bright rosy flowers being very effective. It is common in Britain in pastures, flowering in midsummer. It is easy to cultivate if planted in an open loamy soil with a little chalk added. The tubers should be planted about 3in. apart, and in the mass to produce a fine effect.

O. spectabilis is a showy species from North America, with oblong, green leaves, and stems about 1ft. high, bearing pink-purple flowers, with an ovate, undivided lip. It grows in a mixture of peat and leaf-mould, in a moist, shaded position, flowering in May.

Other pretty species are **O. Munbyana, O. papilionacea, O. purpurea, O. Robertiana,** and **O. sambucina.**

Serapias.

There are four species of Serapias, natives of the countries bordering the Mediterranean, where they occur in pine woods, &c. They are like Orchis in habit, but the flowers differ in having the three upper sepals united and forming a hood, out of which the labellum hangs, tongue-like, and is the most conspicuous part of the flower. The petals are small, and are inclosed in the hood formed by the sepals. Two of the species merit a place in the garden, their flowers being large and attractive.

Culture.—Both species flower about May. They should be planted in a well-drained bed, or in pots, in a light loam, and be kept wet whilst in growth, and dry when at rest.

S. cordigera.—This has narrow, green leaves, mottled with purple at the base. The spike is from 8in. to 12in. high, and about six-flowered. The sepals are lilac, streaked with red, and the lip is pendulous, flat, 1in. long, and coloured rich purple-brown.

S. lingua.—The same in habit and stature as S. cordigera, but the leaves are wholly green, and the flowers are slightly smaller, the lip being crimson, narrower, and less pendulous than in that species.

We have selected for description in this chapter only such hardy kinds as are popularly known as pretty in flower; but there are many others, both British and foreign, which are possessed of characters of interest for those cultivators whose pleasure in plants does not stop at size and colour beauty. The singular forms and highly specialised structure which characterise almost every one of the British species form the subject of one of Charles Darwin's most delightful works, namely, "The Fertilization of Orchids," a book which everyone interested in Orchids should read.

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CHAPTER LXX.

SELECTIONS FOR BEGINNERS.

FOR the guidance of those who are unacquainted with Orchids, but who wish to possess a small collection of them, we have selected fifty plants for each of the three divisions into which, for cultural purposes, Orchids are classed, viz., "Tropical," "Intermediate," and "Cool." The plants selected are, in almost every case, easy to cultivate, easy to procure—*i.e.,* cheap and plentiful in the market—certain flowerers, and ornamental. A few, however, such as Vanda Sanderiana, Cypripedium Rothschildianum, and Miltonia vexillaria, cannot be called cheap, and are not easy to cultivate in comparison with the others; but we have admitted them for the sake of variety, and on account of their exceptional beauty and interest.

For particulars as to treatment and temperatures the reader is referred to the chapters which deal specially with these particular subjects. Some Orchids, such as Dendrobium nobile and Cypripedium caudatum, may be grown in at least two of the divisions; whilst others thrive best when placed in one division for a portion of the year, and then removed to another. But to the beginner who does not purpose having more than one house, this treatment is out of the question, and the plants here selected may be grown in the same house all the year round.

FIFTY SELECT ORCHIDS FOR A STOVE.

Aërides Fieldingii.
  Lobbii.
  virens.
Angræcum eburneum.
  Sanderianum.
  sesquipedale.
Calanthe Veitchii.
  vestita and vars.
Catasetum Bungerothii.
Cattleya Dowiana.
Cœlogyne Massangeana.
Cypripedium barbatum.
  bellatulum.
  Boxallii.
  caudatum.
  Harrisianum.
  hirsutissimum.
  Hookeræ.
  Lawrencianum.
  Rothschildianum.
  Spicerianum.
  Stonei.
  villosum.
Dendrobium aureum.
  Dalhousieanum.
Dendrobium densiflorum.
  fimbriatum oculatum.
  Findlayanum.
  nobile.
  Pierardi.
  thyrsiflorum.
  Wardianum.
Miltonia Roëzlii.
Oncidium Jonesianum.
  Papilio.
  splendidum.
Peristeria elata.
Phalænopsis grandiflora.
  Sanderiana.
  Schilleriana.
  Stuartiana.
Saccolabium ampullaceum.
  Blumei.
Stanhopea Devoniensis.
  eburnea.
  insignis.
  Wardii.
Vanda Amesiana
  Denisoniana.
  Sanderiana.

FIFTY SELECT ORCHIDS FOR AN INTERMEDIATE HOUSE.

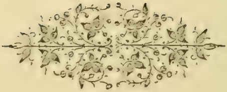
Acineta densa.
Aërides odoratum.
Anguloa Clowesii.
Cattleya Bowringiana.
  Gaskelliana.
  gigas.
  intermedia.
  Mendelii.
  Mossiæ.
  Percivaliana.
  Skinneri.
  Trianæ and vars.
Cœlogyne cristata.
Cœlogyne ocellata.
Cymbidium eburneum.
  Lowianum.
Cypripedium caudatum.
Dendrobium chrysanthum.
  moschatum.
  nobile and vars.
Epidendrum nemorale.
Lælia anceps and vars.
  autumnalis.
  crispa.
  elegans.
  harpophylla.

FIFTY SELECT ORCHIDS FOR AN INTERMEDIATE HOUSE—*Continued.*

- Lælia pumila.
  - purpurata and vars.
- Lycaste Skinneri.
- Miltonia Clowesii.
  - spectabilis.
  - vexillaria.
- Odontoglossum citrosmum.
  - Insleayi.
- Oncidium crispum.
  - Marshallianum.
  - varicosum.
- Peristeria elata.
- Phaius grandifolius.
- Sobralia macrantha.
- Thunia Bensoniæ.
  - Marshalliæ.
- Trichopilia crispa.
  - fragrans and var. nobilis.
  - suavis.
  - tortilis.
- Vanda cærulea.
  - suavis.
  - tricolor.
- Zygopetalum maxillare.

FIFTY SELECT ORCHIDS FOR A COOL HOUSE.

- Ada aurantiaca.
- Anguloa Clowesii.
- Bletia hyacinthina.
- Cattleya citrina.
- Cypripedium insigne.
- Disa grandiflora.
  - racemosa.
- Epidendrum vitellinum majus.
- Lycaste Deppei.
  - Skinneri.
- Masdevallia Chimæra or M. bella.
  - Harryana.
  - ignea.
  - Lindeni.
  - Shuttleworthii.
  - tovarensis.
  - Veitchii.
- Maxillaria grandiflora.
  - picta.
- Odontoglossum Cervantesii.
  - crispum.
  - Edwardi.
  - grande.
  - Hallii.
  - Harryanum.
- Odontoglossum hastilabium.
  - Insleayi.
  - luteo-purpureum.
  - nebulosum.
  - Oërstedii.
  - Pescatorei.
  - pulchellum.
  - Rossii.
  - Sanderianum.
  - triumphans.
- Oncidium concolor.
  - flexuosum.
  - incurvum.
  - leucochilum.
  - macranthum.
  - Marshallianum.
  - tigrinum.
  - varicosum Rogersii.
- Pleione lagenaria.
  - maculata.
  - præcox.
- Promenæa citrina.
- Restrepia antennifera.
- Sophronitis grandiflora.
- Zygopetalum Mackaii.



INDEX.

Generic names are printed in SMALL CAPITALS, and synonyms in *italics*.

A.

ACINETA, 22
  Barkeri, 22
  densa, 23
  Humboldtii, 23
  superba, 23
  Warscewiczii, 23
ACROPERA, 24
  armeniaca, 24
  aurantiaca, 24
  Loddigesii, 24
ADA, 25
  aurantiaca, 25
AËRIDES, 27
  affine, 30
    superbum, 31
  crassifolium, 31
  crispum, 31
    Lindleyanum, 32
    Warneri, 32
  cylindricum, 40
  Emerici, 32
  expansum, 32
  falcatum, 33
  Fieldingii, 33
  Houlletianum, 34
  Huttoni, 40
  japonicum, 34
  Larpentiæ, 33
  Lawrencæ, 34
  Lobbii, 35

AËRIDES—*contd.*
  maculosum, 36
    Schrœderi, 36
  mitratum, 36
  multiflorum, 30
  nobile, 36
  odoratum, 37
    cornutum, 37
    majus, 37
    purpurascens, 37
  quinquevulnerum, 38
    Farmeri, 38
  roseum, 39
    superbum, 39
  roseum, 30
  suavissimum, 39
    aurantiacum, 39
  testaceum, 42
  Thibautianum, 40
  vandarum, 40
  virens, 40
    Dayanum, 41
    Ellisii, 42
    grandiflorum, 42
  Wightianum, 42
Air Flower, 28
All Saints' Flower, 258
ANGRÆCUM, 43
  caudatum, 44
  citratum, 44
  eburneum, 44
  Ellisii, 45

ANGRÆCUM—*contd.*
  falcatum, 45
  Sanderianum, 45
  Scottianum, 46
  sesquipedale, 46
  superbum, 45
ANGULOA, 47
  Clowesii, 48
    macrantha, 49
  eburnea, 49
  intermedia, 49
  purpurea, 49
  Ruckeri, 49
  superba, 23
  uniflora, 49
ANŒCTOCHILUS, 50
  concinnum, 52
  Dominianum, 53
  Frederici-Augusti, 56
  intermedium, 53
  javanicum, 53
  Lowii, 53
    Dayi, 54
    virescens, 54
  Petola, 54
  Reinwardtii, 55
  Roxburghii, 55
  setaceum, 56
    cordatum, 56
    regale, 56
  Veitchii, 53
  xanthophyllum, 56
ANSELLIA, 57
  africana, 58
    congoensis, 58
    gigantea, 58
    nilotica, 58
Arachnanthe Cathcartii, 496
  Lowii, 436
ARETHUSA, 518
  bulbosa, 518
Argyrorchis javanica, 53

B.

BARKERIA, 59
  elegans, 59
  Lindleyana, 60
  Skinneri, 60
  spectabilis, 61
BATEMANNIA, 62
  Beaumontii, 63

BATEMANNIA—*contd.*
  Burtii, 62
  Colleyi, 63
  grandiflora, 63
  Meleagris, 63
Bed or rockery treatment of hardy Orchids, 516
Bee Orchis, 529
Beginners, selections for, 535
Bifrenaria Hadwenii, 452
  Harrisoniæ, 277
BLETIA, 64
  acutipetala, 67
  flava, 409
  gebina, 66
  hyacinthina, 65
  japonica, 66
  patula, 66
  Shepherdii, 66
  Sherrattiana, 66
  Thomsoniana, 450
  tuberculosa, 411
  verecunda, 67
  Woodfordii, 409
BOLLEA, 68
  cœlestis, 68
  Lalindei, 69
  Patinii, 69
Botanical features, 16
Boyle, F., on culture, 2
Brassavola Digbyana, 260
BRASSIA, 70
  antherotes, 71
  Gireoudiana, 71
  Lanceana, 72
    macrostachya, 72
    pumila, 72
  Lawrenceana, 72
    longissima, 72
  maculata, 73
    guttata, 74
  verrucosa, 74
    grandiflora, 74
  Wrayæ, 74
British Orchids, 515
BULBOPHYLLUM, 75
  barbigerum, 76
  Beccarii, 76
  calamarium, 76
  Dearei, 77
  lemniscatum, 77
  Lobbii, 77
    siamense, 77

- BURLINGTONIA, 78
  - candida, 79
  - decora, 79
    - picta, 79
  - fragrans, 79
  - venusta, 80
- Butterfly Orchids, 364, 385, 527

C.

- CALANTHE, 81
  - Masuca, 82
    - grandiflora, 83
  - Veitchii, 83
    - bella, 83
    - Sandhurstiana, 83
    - Sedeni, 83
  - veratrifolia, 83
  - vestita, 83
    - gigantea, 85
    - nivalis, 85
    - porphyrea, 85
    - Regnieri, 85
    - rubro-oculata, 85
    - Turneri, 85
- CALOPOGON, 518
  - pulchellus, 518
- CATASETUM, 87
  - Bungerothii, 88
  - Christyanum, 89
  - *Claveringii*, 90
  - longifolium, 89
  - macrocarpum, 89
  - saccatum, 90
  - scurra, 90
  - *tridentatum*, 90
- CATTLEYA, 91
  - Acklandiæ, 94
  - *amabilis*, 104
  - *amethystina*, 104
  - amethystoglossa, 95
  - *aurea*, 99
  - bicolor, 95
  - Bowringiana, 97
  - Brabantiæ, 119
  - Brymeriana, 117
  - *bulbosa*, 116
  - calummata, 119
  - Chamberlainiana, 119
  - chocoënsis, 97
  - citrina, 97
  - *crispa*, 260
  - dolosa, 98
- CATTLEYA—*contd.*
  - Dominiana, 119
  - Dowiana, 99
    - aurea, 99
  - Eldorado, 99
    - crocata, 100
    - Wallisii, 100
  - exoniensis, 118
  - fausta, 119
  - Forbesii, 100
  - Gaskelliana, 101
  - gigas, 101
    - imperialis, 101
    - Sanderiana, 101
    - Shuttleworthii, 101
  - granulosa, 101
    - Russelliana, 102
  - guttata, 102
    - Leopoldii, 103
    - Russelliana, 103
  - Harrisii, 119
  - Harrisoniana, 103
    - candida, 103
    - maculata, 103
    - violacea, 103
  - Hardyana, 118
  - hybrida picta, 119
  - hybrids, 117
  - intermedia, 103
  - labiata, 104
    - pallida, 105
  - Lawrenciana, 105
  - *lobata*, 264
  - Loddigesii, 106
  - Luddemanniana, 106
    - alba, 107
    - brilliantissima, 107
    - Regina, 107
    - Schrœderi, 107
  - Manglesii, 119
  - Mardelii, 119
  - *marginata*, 266
  - Marstersoniæ, 119
  - maxima, 107
    - alba, 107
    - aphlebia, 107
    - Backhouse's, 107
  - Mendelii, 107
    - bella, 108
    - Bluntii, 108
    - Leeana, 108
    - Morganæ, 108
    - Rothschildiana, 108

CATTLEYA—*contd.*
  Mitchellii, 119
  Mossiæ, 108
    autumnalis, 106
    candida, 110
    Hardyana, 110
    Reineckiana, 110
    Wageneriana, 110
  natural hybrids, 117
  Percivaliana, 111
  Pinelii, 266
  porphyrophlebia, 119
  Prinzii, 95
  pumila, 266
  quadricolor, 114
  Regnelli, 111
  Schilleriana, 111
    concolor, 111
  Schofieldiana, 112
  Skinneri, 112
    alba, 113
    oculata, 113
    parviflora, 113
  speciosissima Lowii, 106
  spectabilis, 266
  suavior, 119
  superba, 113
  Trianæ, 114
    alba, 114
    Backhouseana, 114
    Dodgsoni, 114
    Leeana, 115
    Williamsii, 115
  velutina, 118
  Walkeriana, 115
    nobilior, 116
    Schrœderiana, 116
  Warneri, 116
  Whitei, 118
Chatsworth, Disas at, 234
"Chichilitic Tepatlavhxochitl," 265
CHYSIS, 120
  aurea, 120
  bractescens, 121
  chelsoni, 122
  Limminghei, 122
CIRRHOPETALUM, 123
  Cumingii, 124
  Medusæ, 124
  picturatum, 125
  Thouarsii, 125
CŒLOGYNE, 126
  asperata, 127
CŒLOGYNE—*contd.*
  barbata, 128
  coronaria, 488
  corrugata, 128
  corymbosa, 128
  cristata, 130
    alba, 131
    Chatsworth, 131
    Lemoniana, 131
    maxima, 131
  Dayana, 131
  flaccida, 132
  fuscescens, 132
    brunnea, 132
  Gardneriana, 132
  Lowii, 128
  Massangeana, 133
  ocellata, 134
    maxima, 129
  odoratissima, 134
  pandurata, 135
  Parishii, 136
  Sanderiana, 136
  speciosa, 137
  tomentosa, 134
Cœlogyne, 425
COLAX, 138
  jugosus, 138
Collecting hardy Orchids, 518
Colouring of flowers, 20
Column of flower, 18
Compost, 4, 8
Cool-house, fifty select Orchids for a, 537
  temperatures, 5
CORYANTHES, 140
  macrantha, 141
  maculata, 142
    punctata, 142
  speciosa, 142
Culture, general, 1
  of hardy Orchids, 517
CYCNOCHES, 143
  aureum, 144
  chlorochilon, 144
  ventricosum, 144
  Warscewiczii, 145
CYMBIDIUM, 146
  eburneum, 147
  giganteum, 148
  Hookerianum, 149
  Lowianum, 149
  Mastersii, 150

CYMBIDIUM—*contd.*
  Parishii, 150
  pendulum purpureum, 151
  Sandersoni, 58
  tigrinum, 151
CYPRIPEDIUM, 152
  acaule, 519
  albanense, 191
  albo-purpureum, 181
  Argus, 156
    Moënsii, 157
  arietinum, 519
  Arthurianum, 181
  Ashburtoniæ, 182
  barbatum, 157
    biflorum, 158
    nigrum, 158
    superbum, 158
  bellatulum, 158
  Boissierianum, 159
  Boxallii, 160
    atrata, 160
  Bullenianum, 168
  Burbidgei, 164
  Calceolus, 519
    major, 520
  calophyllum, 182
  calurum, 182
  candidum, 521
  cardinale, 182
  caricinum, 160
  caudatum, 161
    giganteum, 161
    Lindeni, 161
    roseum, 162
    Wallisii, 162
  Charles Canham, 183
    Mrs. Canham, 183
  conchiferum, 184
  concolor, 162
    Regnieri, 163
    sulphurinum, 163
  Crossianum, 184
  Curtisii, 163
  Dayanum, 163
  Dominianum, 184
  Druryi, 164
  Elliottianum, 164
  euryandrum, 184
  Fairieanum, 165
  glanduliferum, 173
  Godefroyæ, 166
  Godseffianum, 185

CYPRIPEDIUM—*contd.*
  grande, 185
  guttatum, 521
  hardy kinds, 515
  Harrisianum, 185
    nigrum, 186
    rubrum, 186
    superbum, 186
    venustum, 186
  Haynaldianum, 166
  hirsutissimum, 167
  Hookeræ, 167
  insigne, 168
    albo-marginatum, 169
    Chantini, 168
    Horsmanianum, 169
    Kimballianum, 169
    Maulei, 168
    Sanderæ, 169
    Wioti, 169
  Io, 186
  Irapeanum, 521
  japonicum, 522
  lævigatum, 173
  Lawrencianum, 170
    albo-marginatum, 170
    atro-purpureum, 170
    biflorum, 170
    elegantissimum, 170
    Hyeanum, 170
    magnificum, 170
    majus, 170
    superbum, 170
    virescens, 170
  Leeanum, 186
    superbum, 186
  Lindeni, 161
  longifolium, 170
  Lowii, 171
  macranthum, 523
  marmorophyllum, 186
  Marshallianum, 187
  Measuresianum, 188
  Meirax, 188
  microchilum, 188
  montanum, 524
  Morganiæ, 188
  neo-guineense, 174
  niveum, 171
  obscurum, 182
  occidentale, 524
  œnanthum, 189
    superbum, 189

CYPRIPEDIUM—*contd.*
- pardinum, 172
- Parishii, 172
- parviflorum, 524
- *Pearcei*, 161
- *Petri*, 164
- philippinense, 172
- politum, 189
- præstans, 173
- pubescens, 525
- purpuratum, 173
- *Roëzlii*, 171
- Rothschildianum, 174
- Sanderianum, 174
- Saundersianum, 189
- Schlimii, 175
- Schröderæ, 190
- Sedeni, 191
  - albanense, 191
  - candidulum, 191
  - porphyreum, 191
- selligerum, 191
  - majus, 192
- spectabile, 525
- Spicerianum, 175
  - giganteum, 177
  - magnificum, 177
  - nigrescens, 177
  - radiatum, 177
  - virescens, 177
  - viride, 177
- Stonei, 177
  - platytænium, 177
- superbiens, 178
- Swanianum, 192
- Tautzianum, 192
- tessellatum-porphyreum, 192
- *Veitchianum*, 178
- venustum, 178
  - pardinum, 179
- vernixium, 193
- vexillarium, 193
- villosum, 179
- Williamsianum, 193

D.

Day temperatures, 5

DENDROBIUM, 194
- aggregatum, 198
  - majus, 199
- Ainsworthii, 231

DENDROBIUM—*contd.*
- albo-sanguineum, 199
- amœnum, 199
- aureum, 199
  - Henshallii, 201
  - philippinense, 201
- *barbatulum*, 213
- Bensoniæ, 201
- bigibbum, 201
- Brymerianum, 202
  - histrionicum, 203
- *Calceolus*, 220
- *Cambridgeanum*, 223
- chlorostele, 231
- chrysanthum, 203
- chrysodiscus, 231
- *chrysotis*, 214
- chrysotoxum, 203
  - suavissimum, 204
- crassinode, 204
  - Barberianum, 204
- crepidatum, 205
- crystallinum, 205
- *cupreum*, 220
- Cybele, 232
- Dalhousieanum, 205
- Dearei, 207
- densiflorum, 207
  - *album*, 208
  - Schrœderi, 248
- Devonianum, 208
- Dominianum, 232
- Draconis, 209
- *eburneum*, 209
- Endocharis, 232
- euosmum, 232
- Falconeri, 209
- Farmeri, 210
  - albiflorum, 211
  - aureoflavum, 211
- fimbriatum, 211
  - oculatum, 211
  - Paxtoni, 211
- Findlayanum, 211
- formosum, 212
- Fytchianum, 213
- Griffithianum, 213
  - Guibertianum, 213
- *heterocarpum*, 200
- *Hillii*, 227
- Hookerianum, 213
- infundibulum, 214
  - Jamesianum, 216

DENDROBIUM—*contd.*
  Jenkinsii, 216
  Leechianum, 232
  Linawianum, 216
  lituiflorum, 217
    candidum, 218
    Freemanii, 218
  Loddigesii, 218
  Lowii, 218
  Macarthiæ, 219
  macrophyllum, 227
  melanodiscus, 232
  micans, 232
  moniliforme, 217
  moschatum, 220
    Calceolaria, 220
  nobile, 221
    cœrulescens, 222
    Cooksonianum, 222
    nobilius, 223
    pallidiflorum, 226
    Sanderianum, 223
    Schrœderianum, 223
  ochreatum, 223
  Parishii, 223
  Paxtoni, 203, 211
  Phalænopsis, 224
  Pierardi, 225
  Pitcherianum, 232
  porphyrogastrum, 232
  primulinum, 226
  pulchellum, 218
  rhodostoma, 232
  Schneiderianum, 232
  speciosum, 226
    Hillii, 227
  splendidissimum, 232
  superbiens, 227
  superbum, 227
    anosmum, 228
    Huttoni, 228
  thyrsiflorum, 228
  tortile, 228
  transparens, 229
  Vannerianum, 232
  Wardianum, 230
DISA, 233
  grandiflora, 235
  racemosa, 236
  secunda, 236
  tripetaloides, 236
  uniflora, 235
Distribution, geographical, 19
Dossinia marmorata, 53
Dove Orchid, 396

E.

El Spirito Santo, 399
Epichil, 464
EPIDENDRUM, 237
  aloifolium, 242
  amabile, 241
  atropurpureum, 238
    roseum, 238
  aurantiacum, 238
  aureum, 239
  bicornutum, 239
    indivisum, 239
  Brassavolæ, 240
  ciliare, 240
  cuspidatum, 240
  dichromum, 240
  evectum, 241
  falcatum, 241
  Frederici Gulielmi, 241
  ibaguense, 241
  indivisum, 239
  macrochilum, 238
  maculatum, 243
  Medusæ, 330
  nemorale, 242
  O'Brienianum, 242
  Parkinsonianum, 242
  prismatocarpum, 242
  radicans, 243
  rhizophorum, 243
  Schomburgki, 241
  syringothyrsus, 241
  tibicinis, 450
  Uro-Skinneri, 243
  verrucosum, 242
  vitellinum majus, 243
  Wallisii, 244
Eria coronaria, 488
  suavis, 488
Esmeralda Cathcartii, 496
  Sanderiana, 501

F.

Fieldia, 490
  gigantea, 498
  lissochiloides, 492

Flor de Majo, 264
Flos Aëris, 28
Flower, structure of, 16
Fly Orchis, 529
Fragrance, 20
Frame culture of hardy Orchids, 517

G.

GALEANDRA, 245
  Baueri, 245
    lutea, 246
  Devoniana, 246
  flaveola 247
  nivalis, 247
Geographical distribution, 19
Grammangis Ellisii, 249
GRAMMATOPHYLLUM, 248
  Ellisii, 249
  Fenzlianum, 249
  Measuresianum, 249
  speciosum, 249
Greenhouse temperatures, 5

H.

HABENARIA, 527
  bifolia, 527
  blepharoglottis, 528
  ciliaris, 527
  fimbriata, 528
Hardy Orchids, 515
Heat, degrees of, 5
HOULLETIA, 251
  Brocklehurstiana, 251
  odoratissima, 252
    antioquensis, 253
    xanthina, 253
  picta, 253
Huntleya cerina, 403
  marginata, 508
  Meleagris, 63
Hypochil, 464

I.

Imported Orchids, treatment of, 12
Insecticides, 11
Insects and other pests, 11
Intermediate-house, fifty select Orchids for an, 536
  temperatures, 5

K.

Kefersteinia graminea, 431

L.

Labellum, 18
Lady's Slipper, 152, 518
Lady's Tresses, 50
LÆLIA, 254
  albida, 255
    bella, 256
    Stobartiana, 256
    sulphurea, 256
  amanda, 268
  Amesiana, 269
  anceps, 256
    alba, 258
    Amesiana, 258
    Barkeriana, 258
    Dawsoni, 258
    Sanderiana, 258
    virginalis, 258
    Warneri, 258
    Williamsii, 258
  autumnalis, 258
    atrorubens, 259
    venusta, 259
  Batemaniana, 270
  bella, 269
  Boothiana, 264
  callistoglossa, 269
  caloglossa, 269
  Canhamiana, 269
  cinnabarina, 259
  Crawshayana, 268
  crispa, 259
    Buchanan's, 260
    delicatissima, 260
    purpurea, 260
  Dayana, 266
  Digbyana, 260
  Digbyana-Mossiæ, 270
  Dominiana, 269
  Dormaniana, 261
  elegans, 261
    alba, 262
    gigantea, 262

- LÆLIA—*contd.*
  - elegans prasiata, 262
    - Schilleriana, 262
    - Turneri, 262
  - euspatha, 269
  - exoniensis, 269
  - *exoniensis*, 118
  - felix, 269
  - flammea, 269
  - flava, 262
  - furfuracea, 262
  - grandis, 262
  - harpophylla, 263
  - Jongheana, 263
  - Leeana, 269
  - lilacina, 269
  - lobata, 264
  - majalis, 264
  - monophylla, 265
  - Perrinii, 265
    - *alba*, 265
    - nivea, 265
  - Philbrickiana, 269
  - Pilcheri, 269
  - porphyritis, 269
  - *præstans*, 266
  - pumila, 265
    - Dayana, 266
    - præstans, 266
  - purpurata, 266
    - Brysiana, 267
    - Russeliana, 267
    - Schrœderi, 267
  - *Rivieri*, 264
  - rubescens, 267
    - alba, 267
    - rosea, 267
  - Sedeni, 269
  - superbiens, 267
  - triophthalma, 269
  - Veitchiana, 269
  - Wyattiana, 269
  - xanthina, 268
- *Limodorum altum*, 67
- Lip, 18
- LISSOCHILUS, 271
  - giganteus, 272
  - Horsfallii, 272
  - Krebsii, 274
    - speciosus, 274
- Lubbock, Sir J., on Cypripedium longifolium, 153
  - aromatica, 276
- LYCASTE, 275
  - *cristata*, 394
  - Deppei, 276
    - punctatissima, 277
  - *grandis*, 395
  - Harrisoniæ, 277
    - citrina, 277
    - grandiflora, 278
  - plana, 278
  - *rugosa*, 395
  - Skinneri, 278
    - alba, 279
    - nigro-rubra, 280
  - tetragona, 280
  - tricolor, 280

M.

- *Macodes javanica*, 53
  - *Petola*, 54
- Marsh Orchis, 532
- Mary's Shoe, 152
- MASDEVALLIA, 281
  - amabilis, 283
    - lineata, 284
  - Backhousiana, 284
    - senilis, 284
  - bella, 284
  - *Benedictii*, 290
  - *candida*, 301
  - Carderi, 285
  - chelsoni, 285
  - Chestertoni, 286
  - Chimæra, 286
    - Wallisii, 287
  - coccinea, 288
  - Crossii, 297
  - Davisii, 288
  - ephippium, 289
  - erythrochæte, 290
    - Benedictii, 290
    - Houtteana, 290
  - Estradæ, 290
  - Harryana, 291
    - atrosanguinea, 291
    - Bull's-blood, 291
    - cœrulescens, 291
    - decora, 291
    - Denisoni, 291
    - grandiflora, 291
    - lateritia, 291
    - lilacina, 291

MASDEVALLIA—*contd.*
- Harryana miniata, 291
  - versicolor, 291
- *Houtteana*, 290
- ignea, 292
  - aurantiaca, 293
  - Boddaërtiana, 293
  - Eckhartii, 293
  - Marshalliana, 293
  - Massangeana, 293
  - Stobartiana, 293
- Lindeni, 293
- *Lindeni*, 291
- macrura, 294
- *melanoxantha*, 295
- Mooreana, 295
- Nycterina, 295
- *Nycterina*, 287
- polysticta, 296
- racemosa, 296
- Roëzlii, 297
- rosea, 298
- *senilis*, 284
- Shuttleworthii, 298
  - xanthocorys, 300
- tovarensis, 300
- triangularis, 301
- triaristella, 301
- trichæte, 302
- tridactylites, 302
- triglochin, 302
- *Trochilus*, 290
- Veitchii, 302
  - grandiflora, 303
- Wageneriana, 303
- *Wallisii*, 287

MAXILLARIA, 304
- *acutipetala*, 308
- *aromatica*, 276
- *Brocklehurstiana*, 252
- *Deppei*, 277
- *graminea*, 431
- grandiflora, 305
- *Harrisoniæ*, 277
- luteo-alba, 306
- *luteo-grandiflora*, 306
- nigrescens, 306
- picta, 307
  - acutipetala, 308
  - brunnea, 308
- Sanderiana, 308
- *stapelioides*, 433
- *Steelii*, 453

MAXILLARIA—*contd.*
- *tetragona*, 280
- venusta, 308

May Flower, 220, 264

Mesochil, 464

MICROSTYLIS, 310
- calophylla, 311
- chlorophrys, 311
- discolor, 311
- Lowii, 312
- metallica, 312

MILTONIA, 314
- anceps, 316
- *bicolor*, 322
- candida, 316
  - flavescens, 316
  - grandiflora, 316
  - Jenischiana, 316
- Clowesii, 317
- cuneata, 317
- Moreliana, 318
- Phalænopsis, 318
- *Pinellii*, 316
- *purpureo-violacea*, 318
- Regnelli, 319
  - purpurea, 319
- Roëzlii, 319
  - album, 320
  - rubrum, 320
- *speciosa*, 318
- spectabilis, 320
  - radians, 322
  - rosea, 322
  - virginalis, 322
- vexillaria, 322
  - Hilliana, 323
  - *Klabochorum*, 323
  - leucoglossa, 323
  - rubella, 323
  - superba, 323
- Warscewiczii, 325

Mocassin Flowers, 153, 526

Monacanthus longifolius, 89

Moore, Mr., on geographical distribution, 19

MORMODES, 326
- Colossus, 327
- luxatum, 327
  - eburneum, 328
  - punctatum, 328
- pardinum, 328
  - unicolor, 328
- *Williamsii*, 328

N.

NANODES, 329
  Medusæ, 329
Newly-imported Orchids, treatment of, 12
Night temperatures, 5
Number of cultivated species, 20

O.

ODONTOGLOSSUM 331
  amplissimum, 352
  anceps, 316, 354
  Andersonianum, 334
    angustatum, 335
    lobatum, 335
    Pollett's, 335
  baphicanthum, 335
  bictonense, 335
  blandum, 336
  cariniferum, 336
  Cervantesii, 336
    decorum, 338
    punctatissimum, 338
  cirrhosum, 338
  cirrosum, 338
  citrosmum, 338
    album, 339
    punctatum, 339
  Clowesii, 217
  Coradinei, 339
  cordatum, 339
    sulphureum, 340
  coronarium, 340
    chiriquense, 340
    miniatum, 340
  crispum, 341
    aureum, 342
    Chestertoni, 342
    Cooksoni, 342
    giganteum, 342
    Jenningsianum, 342
    limbatum, 342
    roseum, 342
    Sanderianum, 343
    Stevensii, 343
    Trianæ, 343
    Veitchianum, 343
  cristatellum, 344
  cristatum, 344

ODONTOGLOSSUM—*contd.*
    cristatellum, 344
  cuspidatum, 352
  Edwardi, 344
  Egertoni, 358
  facetum, 352
  gloriosum, 356
  grande, 345
    splendens, 345
  Hallii, 345
  Harryanum, 347
  hastilabium, 349
    fuscatum, 349
    hebraicum, 349
  Hinnus, 352
  Insleayi, 349
    leopardinum, 350
    macranthum, 360
    pantherinum, 350
    splendens, 350
  Krameri, 350
  læve, 351
  Lehmanni, 344
  Lindleyanum, 351
  Londesboroughianum, 351
  Luddemannianum, 354
  luteo-purpureum, 352
    amplissimum, 352
    cuspidatum, 352
    facetum, 352
    Hinnus, 352
    Mulus, 352
    sceptrum, 353
    Vuylstekianum, 353
  maculatum, 353
  maculatum, 340
  madrense, 354
  maxillare, 354
  membranaceum, 338
  mirandum, 354
  Mulus, 352
  nævium, 354
    majus, 355
  nebulosum, 355
    candidissimum, 355
    pardinum, 355
  nobile, 257
  odoratum, 355
  Oërstedii, 356
    major, 356
  pendulum, 339
  Pescatorei, 356
    Schrœderianum, 357

ODONTOGLOSSUM—*contd.*
- Pescatorei Veitchianum, 357
  - Vervaetianum, 357
- *Phalænopsis*, 319
- polyxanthum, 357
- pulchellum, 358
- ramosissimum, 358
- *Roëzlii*, 320
- Rossii, 358
  - aspersum, 359
  - Ehrenbergii, 359
  - Humeanum, 359
- Sanderianum, 359
- *sceptrum*, 353
- Schlieperianum, 360
- tripudians, 360
- triumphans, 360
- Uro-Skinneri, 362
- *vexillarium*, 323
- *Vuylstekianum*, 353

Odour, 20

ONCIDIUM, 363
- *albo-violaceum*, 380
- ampliatum, 365
  - majus, 366
- *anceps*, 316
- *aurosum*, 375
- *Barkeri*, 390
- Brunleesianum, 366
- candidum, 366
- cheirophorum, 368
- concolor, 368
- cornigerum, 369
- crispum, 369
  - grandiflorum, 371
- Crœsus, 371
- cryptocopis, 388
- cucullatum, 372
  - Chestertoni, 373
  - flavidum, 373
  - macrochilum, 373
  - nubigenum, 373
  - Phalænopsis, 373
- curtum, 373
- dasystyle, 373
- *digitatum*, 382
- excavatum, 375
- falcipetalum, 388
- flexuosum, 375
- Forbesii, 377
- *fuscatum*, 325
- Gardneri, 377
- hæmatochilum, 378

ONCIDIUM—*contd.*
- hastiferum, 388
- incurvum, 378
  - album, 380
- Jonesianum, 380
- *lamelligerum*, 383
- Lanceanum, 381
- leucochilum, 382
- *longipes*, 372
- ludens, 388
- macranthum, 382
  - lamelligerum, 383
- *Mantinii*, 384
- Marshallianum, 383
  - Mantinii, 384
- ornithorhynchum, 384
  - albiflorum, 385
- Papilio, 385
  - Eckhardtii, 386
  - Kramerianum, 386
- prætextum, 386
- *Rigbyanum*, 388
- *roseum*, 385
- sarcodes, 387
- serratum, 388
- splendidum, 389
- superbiens, 389
- tigrinum, 390
  - *splendidum*, 389
- trifurcatum, 389
- varicosum, 391
  - Rogersii, 392
- xanthodon, 389
- zebrinum, 392

OPHRYS, 528
- apifera, 529
- aranifera, 529
- aurea, 530
- Bertoloni, 530
- bombylifera, 530
- exaltata, 530
- insectifera, 529
- lutea, 530
- muscifera, 529
- speculum, 530
- tenthredinifera, 530

ORCHIS, 530
- foliosa, 531
- latifolia, 532
- laxiflora, 532
- maculata, 532
- Munbyana, 533
- papilionacea, 533

- ORCHIS—*contd.*
  - purpurea, 533
  - pyramidalis, 533
  - Robertiana, 533
  - sambucina, 533
  - spectabilis, 533
  - *tripetaloides*, 236

P.

- *Pachystoma Fortunei*, 463
- *Palumbina candida*, 366
- PAPHINIA, 393
  - cristata, 394
  - grandis, 394
  - rugosa, 395
  - *Sanderiana*, 395
- Peculiarities of Orchids, 16
- PERISTERIA, 396
  - *Barkeri*, 23
  - cerina, 397
    - guttulata, 398
  - *Humboldtii*, 23
  - elata, 398
  - pendula, 400
- PESCATOREA, 401
  - Backhousiana, 402
  - cerina, 402
  - Dayana, 403
    - candidula, 403
    - rhodacra, 403
    - splendens, 403
  - Klabochorum, 404
    - ornatissimum, 404
  - Lehmanni, 405
  - Wallisii, 405
- Pests, 11
- Petals, 17
- PHAIUS, 406
  - *albus*, 478
  - *Bensoniæ*, 478
  - *Bernaysii*, 408
  - bicolor, 407
  - Blumei, 407
    - Bernaysii, 408
  - grandifolius, 408
  - maculatus, 408
  - *Marshalliæ*, 479
  - tuberculosus, 410
  - *Wallichii*, 411
  - Wallichii, 411
    - Mannii, 411
- PHALÆNOPSIS, 412
  - amabilis, 415
    - gloriosa, 416
  - *antennifera*, 418
  - *Aphrodite*, 416
  - Esmeralda, 416
    - antennifera, 418
  - *gloriosa*, 416
  - grandiflora, 418
  - intermedia, 418
    - Brymeriana, 419
    - Porteana, 419
  - *Lobbii*, 419
  - Lowii, 419
  - Luddemanniana, 420
  - Sanderiana, 420
  - Schilleriana, 421
  - Stuartiana, 422
    - nobilis, 423
    - punctatissima, 423
  - violacea, 423
    - Bowringiana, 423
    - Schrœderiana, 423
- *Pilumna fragrans*, 482
  - *nobilis*, 482
- PLEIONE, 424
  - Hookeriana, 426
  - humilis, 426
  - lagenaria, 427
  - maculata, 428
  - præcox, 429
  - *Wallichiana*, 429
- Pot culture of hardy Orchids, 517
- Potting, 4
- PROMENÆA, 430
  - citrina, 431
  - graminea, 431
  - Rollissoni, 431
  - stapelioides, 433
  - *xanthina*, 431
- Pseudo-bulb, 18
- Purple-fringed Orchis, 528

R.

- Ram's-head Orchid, 519
- RENANTHERA, 434
  - coccinea, 435
  - Lowii, 436
- RESTREPIA, 437
  - antennifera, 438
  - elegans, 438

RESTREPIA—*contd.*
  guttata, 438
  maculata, 438
  pandurata, 439
Rhynchostylis cœlestis, 444
  retusa, 446
    guttata, 446
  præmorsa, 443
  violacea, 447
Rockery treatment of hardy Orchids, 516

S.

SACCOLABIUM, 440
  ampullaceum, 442
    moulmeinense, 442
  bellinum, 442
  Blumei, 443
    Heathii, 443
    majus, 443
  cœleste, 444
  curvifolium, 444
    luteum, 444
  giganteum, 444
    illustre, 445
  guttatum, 445
    giganteum, 446
  Harrisonianum, 447
  Heathii, 443
  Hendersonianum, 446
  miniatum, 446
  miniatum, 444
  rubrum, 442
  Turneri, 446
  violaceum, 447
    Harrisonianum, 447
S. Sebastian, Flower of, 112
Sarcopodium Henshalli, 77
  Lobbii, 77
Sawfly Orchis, 530
Scent, 20
SCHOMBURGKIA, 448
  Lyonsii, 449
  Thomsoniana, 449
  tibicinis, 450
    grandiflora, 450
SCUTICARIA, 451
  Hadwenii, 452
    bella, 452
    pardalina, 452
  Keyseriana, 453

SCUTICARIA—*contd.*
  Steelii, 452
Selecting exotic Orchids, 13
Selections for beginners, 535
Selenipedium, 153
Sepals, 17
SERAPIAS, 533
  cordigera, 534
  lingua, 534
Shading, 5
Smith, John, on culture of Aërides, 29
SOBRALIA, 454
  leucoxantha, 455
  macrantha, 456
    Kienastiana, 456
    nana, 456
    pallida, 456
  sessilis, 456
  xantholeuca, 457
Soil, 4, 8
Sophrocattleya Batemaniana, 270
SOPHRONITIS, 458
  cernua, 459
  grandiflora, 270, 459
    purpurea, 460
  militaris, 459
  violacea, 460
SPATHOGLOTTIS, 461
  Augustorum, 463
  aurea, 462
  Fortunei, 462
  Kimballiana, 462
  Vieillardii, 463
Species, number of, in cultivation, 20
Spider Orchis, 529
Spirito Santo, el, 399
Spyers, Mr., on Odontoglossum coronarium, 340
STANHOPEA, 464
  amœna, 473
  Barkeri, 473
  Bucephalus, 466
  Devoniensis, 467
  eburnea, 467
  ecornuta, 468
  florida, 469
  grandiflora, 467, 468
  graveolens, 473
  guttulata, 471
  insignis, 469
  Jenischiana, 467

STANHOPEA—*contd.*
  Lindleyi, 471
  maculosa, 467
  Martiana, 469
    bicolor, 471
  oculata, 471
  platyceras, 471
  Schmidtii, 471
  tigrina, 472
  velata, 471
  Wardii, 473
Stauropsis, 490
  Batemanni, 492
STENOGLOTTIS, 474
  fimbriata, 474
Stove, fifty select Orchids for a, 536
  temperatures, 5
Structure and other peculiarities, 16
Summer temperatures, 5
Swan Orchids, 143

T.

Temperatures, table of, 5
Terrestrial Orchids, culture of, 7
Thomas, O., on Disa, 234
THUNIA, 476
  alba, 478
  Bensoniæ, 478
  Marshalliæ, 478
  Veitchiana, 479
Traps for insects, 11
TRICHOPILIA, 480
  coccinea, 482
  crispa, 481
    marginata, 481
  fragrans, 482
    nobilis, 482
  Galeottiana, 482
  Lehmanni, 482
  lepida, 483
  marginata, 482
  suavis, 483
  tortilis, 486
  Turialvæ, 483
TRICHOSMA, 487
  suavis, 487
Tropical Orchids, fifty select, 536

U.

Uropedium, 153
  Lindeni, 161

V.

VANDA, 489
  Amesiana, 491
  Batemanni, 492
  Bensoni, 493
  cærulea, 493
  cærulescens, 495
    Boxallii, 495
  Cathcartii, 495
  Denisoniana, 497
    hebraica, 497
  densiflora, 445
  gigantea, 497
  Hookeriana, 498
  insignis, 498
    Schrœderiana, 499
  Kimballiana, 499
  Lindleyana, 498
  Lowii, 436
  Parishii, 499
    Marriottiana, 500
  Roxburghii, 500
  Sanderiana, 500
  suavis, 501
  teres, 503
  tessellata, 500
  tricolor, 504
    Dodgsoni, 505
    insignis, 505
    Leopoldi, 505
    Patersoni, 505
    planilabris, 505
    Russelliana, 505
    suaveolens, 305
    Warneri, 505
Veitch, J., on Cattleyas, 91
  on Cypripedium, 153
  on Odontoglossum luteo-purpureum, 352
Ventilation, 9
Venus' Slipper, 152
Volxem, Van, on Cattleyas, 92

W.

Warrea discolor, 507
  quadrata, 508
WARSCEWICZELLA, 506
  discolor, 507
  marginata, 507
  quadrata, 508

WARSCEWICZELLA – *contd.*
  velata, 508
  Wendlandii, 508
Watering, 8
Winter temperatures, 5

Y.

Yellow-fringed Orchis, 527

Z.

ZYGOPETALUM, 509
  africanum, 335
  Backhousianum, 402
  cerinum, 403
  citrinum, 431
  Clayi, 510
  cœleste, 69
  crinitum, 510
  Dayanum, 403
  Gautieri, 511
  gramineum, 431
  intermedium, 511
  Klabochorum, 404
  Lalindei, 69
  Mackaii, 512
  maxillare, 512
  Patinii, 69
  rostratum, 513
  Sedeni, 513
  velatum, 508
  Wallisii, 405
  Wendlandi, 508

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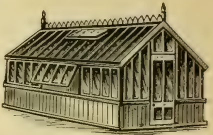

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